SUMMARY

This joint EIR/EIS was prepared by the California Department of Fish and Game (DFG) and the U.S. Forest Service (USFS) for the proposed Lake Davis Pike Eradication Project (Proposed Project). Pike (and all members of the Family *Esocidae*) are restricted in California. It is unlawful to import, transport, or possess live restricted animals listed in Section 671 of Title 14 of the California Code of Regulations (CCR), including pike, except under permit issued by the DFG. Pike have been designated "detrimental" by the state and are restricted because they have been found to pose a threat to native wildlife, the agriculture interests of the state or to public health or safety under Section 671, subdivisions (b) and (c)(5)(Q) of Title 14 of the CCR. The Legislature has declared the protection and conservation of fish and wildlife resources to be of utmost public interest. Many sections of the California Fish and Game Code (FGC) provide for the protection, conservation, and management of California fisheries and other aquatic resources, including but not limited to the following: 1600 *et seq.*, 1700, 2050 *et seq.*, 2118, 2119, 5501, and 15500 *et seq.* and associated regulations in Title 14 of the CCR such as 5.51, 236, 238, 238.5, and 671. In some instances, the DFG uses chemicals (piscicides) to manage fisheries in California. This project is designed to help protect the fishery and other aquatic resources of Lake Davis and the state by eradicating pike from Lake Davis and its tributaries.

Because Lake Davis is located wholly on National Forest System (NFS) lands, the Plumas National Forest (PNF) would be required to issue a special use permit to the DFG authorizing the use and occupation of NFS land.

Two temporary Forest Closure Orders (referred to as closures, forest closures, or orders) are included in the Proposed Project. One closure would prohibit human entry into the previously submerged reservoir bed, as it becomes exposed with the lowering of the reservoir waters. This closure would be to protect historical and cultural artifacts from human disturbance. The second closure would prohibit human entry into National Forest System lands and roads in the vicinity of rotenone storage and application sites, including Lake Davis and tributary streams. This second closure would also apply to the no chemical treatment alternative, which would protect public safety during the time that intensive construction-type activity is occurring at Lake Davis and tributary streams (Dillingham 2006).

S.1 Background

Pike were illegally introduced into Frenchman Lake, near Lake Davis, in the late 1980s and were first observed there in 1988. These fish subsequently spread into the Sierra Valley at the headwaters of the Middle Fork Feather River. Pike were successfully eradicated from these areas in 1991 and 1992 and remain absent there at this time. They were first observed in Lake Davis in 1994.

As a result of the 1994 discovery of pike in Lake Davis, the DFG implemented an eradication project in 1997. The DFG prepared an EIR to evaluate and select appropriate management actions (DFG 1997) for that project. In October 1997, the DFG treated Lake Davis with rotenone. Two reports were prepared after the 1997 treatment concerning (1) the chemical residues associated with the treatment (Siepmann and Finlayson 1999), and (2) control, containment, and neutralization (Lee 2000).

Pike were rediscovered in Lake Davis in 1999. These pike either survived the 1997 treatment or were reintroduced into the reservoir. Genetic studies indicate that the current population is descended from the initial population. However, these studies are inconclusive as to whether the current population is from offspring that survived the 1997 treatment in the reservoir and surrounding waters or were from fish that were removed from Lake Davis prior to the treatment and then reintroduced to the reservoir after the 1997 treatment.

Following the rediscovery of pike, a group of community members, including private citizens and elected city and county officials, formed the Lake Davis Steering Committee. Representatives from State and Federal agencies participate in the meetings to share information, answer questions, and address issues relating to pike in Lake Davis. This group developed a plan titled "Managing Northern Pike at Lake Davis, A Plan for Y2000," known as the *Y2000 Plan*, which outlined a series of measures to reduce the pike population. Since 2000, many of these measures have been used to try to control and contain the pike population within the reservoir. In spite of these intensive efforts, data indicate that the pike population continues to expand.

In December 2003, the Lake Davis Steering Committee sent a letter to Secretary for Resources Mike Chrisman, requesting that the DFG investigate methods to rid Lake Davis of the pike. Secretary Chrisman responded by recognizing the need for the DFG to investigate safe and effective methods of ridding the state of pike. He also acknowledged that cooperation with the local community, protection of public health, and consideration of economic issues are important to any decision to effectively deal with the pike. In May of 2004, the DFG compiled a list of eradication options which had been suggested by various persons and/or agencies. An evaluation of the list indicated that the use of formulated rotenone or a combination of formulated rotenone and rotenone powder combined with a significant drawdown of Lake Davis could be a feasible, effective, and safe method for eradicating the pike. It also recommends that any such project, if proposed by the DFG, should be thoroughly evaluated pursuant to applicable environmental laws. It was determined that continuing the current "Control and Containment" program was not a viable method for eradication.

If pike are not eradicated from Lake Davis, they will almost certainly escape the reservoir and spread to other waters within the state at some point in the future (Moyle 2002). Once they become established in these waters, it will be very difficult if not impossible to control their numbers and prevent their spread. Pike are likely to have substantial ecological and economic effects if they become established in the waters of the Central Valley.

Since the rediscovery of pike at Lake Davis in 1999, the pike are now well-established and are found throughout the reservoir. Consequently, the pike have adversely affected the trout fishery as well as the ecology of the reservoir. The problems pike have caused at Lake Davis could occur in other areas of the state or region if pike escape or are moved and become established elsewhere. For example, pike would be well-adapted to establish successful populations in many other waters of the state including waters of the Central Valley and the Delta (see Appendix A, *Assessment of Northern Pike Habitat in California's Central Valley and Potential Impact of Introduction* [Maniscalco and Morrison 2006]). One of the reasons that pike have the ability to invade many waters in California is that pike can tolerate

conditions that are very stressful or lethal to many fish (e.g. high temperatures, low dissolved oxygen concentrations, brackish water).

In many places habitat characteristics in the Sacramento-San Joaquin Delta and rivers in the Central Valley are very similar to those required by pike, and Central Valley streams and the Delta have high species richness. These waters support a number of species whose populations have already declined significantly, as well as many other species which are vulnerable to predation by pike (Maniscalco and Morrison 2006, Appendix A). Many of these species are likely to be adversely affected should pike become established in the waterways of Central Valley. These include chinook salmon, steelhead, delta smelt, and splittail, the populations of which are currently in peril, even without the presence of pike in the Delta (Moyle 2002).

S.2 Project Objectives/Purpose and Need

The DFG proposes to eradicate pike from Lake Davis and all of its tributaries to re-establish the trout fishery at Lake Davis and to prevent the pike from escaping from the reservoir and causing ecological impacts such as those that have occurred at Lake Davis in other parts of the State or region. The USFS action for the project is the issuance of a special use permit to the DFG and potentially two forest closure orders to protect resources and public health and safety.

The primary objective of the combined proposals is to:

- successfully eradicate pike from Lake Davis and its tributary waters.

The secondary objectives of the project are to:

- carry out the project quickly to reduce the ongoing risk that pike will escape or be moved from the reservoir and spread to other waters;
- use a method that has been proven to be effective in laboratory and field experiments;
- use a method that is technically feasible to implement;
- comply with applicable laws;
- protect public health and safety; and
- minimize environmental impacts.

The project is needed because efforts to control and contain the pike population in Lake Davis have been of limited value. The pike population continues to grow despite these efforts and anglers are increasingly catching more pike. In addition, on May 20, 2006, the DFG conducted a checkpoint at Lake Davis and discovered that anglers are moving live pike from the reservoir. Of 71 vehicles that were inspected, five pike were found, two of which were alive. All five pike were confiscated. In addition, as previously mentioned, in 2006 the reservoir came within 27 inches of capacity because of an unusually wet winter and spring, and small pike were found for the first time in the cove near the Lake Davis spillway.

Should pike escape or be moved from Lake Davis, they have the potential to do irreversible damage to the aquatic ecosystem and fisheries in the San Francisco Bay-Delta estuary and its

watershed, as well as potentially harm other areas of California and the region. The CALFED Bay-Delta Program Ecosystem Restoration Program Plan has identified halting the unauthorized introduction and spread of potentially harmful non-native introduced species of fish, such as pike in Lake Davis, in the Bay-Delta and Central Valley as a strategic objective (CALFED 2000).

S.3 Public Involvement Summary

The DFG and USFS are committed to an inclusive, open, and transparent process to evaluate the Proposed Project and the alternative approaches to eradicate pike from Lake Davis. They are actively engaging the local community through a variety of public outreach activities including, but not limited to, participating in meetings of the Lake Davis Steering Committee and other community or club meetings, and holding informational workshops.

Announcements and updates regarding the project and public outreach activities are made by one or more means which may include, but not necessarily be limited to, news releases, mailings, handouts, announcements at Lake Davis Steering Committee meetings, public workshops, and the DFG's website at: http://www.dfg.ca.gov/northernpike.

The DFG and USFS conducted scoping meetings prior to preparing the Draft EIR/EIS. In addition, the DFG and USFS are consulting and coordinating with numerous State, Federal, and local agencies. Results from the public scoping process reflect a diverse, challenging range of concerns for the DFG and USFS to address regarding the project (Section S.5). These results reflect a strong public concern for and commitment to Lake Davis. The DFG and USFS remain committed to supporting public outreach and involvement activities throughout the CEQA/NEPA process.

S.3.1 Lake Davis Steering Committee

After the 1997 eradication treatment, a group of local community members and leaders formed the Lake Davis Steering Committee with participation by representatives of Federal, State, and local governmental agencies, including the DFG, to share information and address issues regarding pike in Lake Davis. The Lake Davis Steering Committee meets regularly with the DFG, and other State, Federal, and local agencies. This group developed a plan titled "Managing Northern Pike at Lake Davis, A Plan for Y2000," known as *The Y2000 Plan*, which outlined a series of measures to reduce the pike population. Since 2000, many of these measures have been used to try to control and contain the pike population within the reservoir. In spite of these intensive efforts, data indicate that the pike population continues to expand. In December 2003, the Lake Davis Steering Committee sent a letter to Secretary for Resources Mike Chrisman requesting that the DFG research alternatives for ridding pike from the reservoir, while protecting public health and the local economy. In response, Secretary Chrisman recognized the need for the DFG to investigate safe and effective methods of ridding the state of pike. He also acknowledged that cooperation, protection of public health, and consideration of economic issues are important to any decision to effectively deal with the pike.

S.3.2 Public Scoping

The DFG, in compliance with CEQA issued a Notice of Preparation (NOP) September 14, 2005. The USFS published a Notice of Intent (NOI) in the Federal Register (Volume 68: Number 217), also on September 14, 2005. The date of publication for both the NOP and NOI signified the opening of the scoping period which invited the public to offer comments on the project until public scoping ended on October 31, 2005. See Appendix B for the NOP, the NOI, and the CEQA Initial Study.

Four public scoping meetings on the project were held prior to preparation of this EIR/EIS. Two meetings were held on September 26, 2005, in Portola, California, at the Eastern Plumas Health Care Education Center. The first meeting began at 1:00 p.m.; the second, at 6:30 p.m. The third and fourth meetings were held in Sacramento, California, at the Radisson Hotel on September 28, 2005, at 1:00 p.m. and 6:30 p.m. Public press releases were issued to local radio, television, and print media outlets to notify the public of the meetings. Approximately 4,022 direct mailing notifications were prepared and sent to all residents of Eastern Plumas County. An additional 1,000 notices were sent to potentially interested parties including land owners, residents, various State, local, and Federal agencies along with existing DFG and USFS contacts. The proposal was published in the PNF schedule of Proposed Actions in July 2006.

These meetings were conducted to inform the public of the role that attendees and interested parties could play in the environmental review process and that their scoping comments would be considered in preparing the Draft EIR/EIS and would be published in a scoping report as part of the public record. Information concerning the project background and justification was presented to the attendees as well as an overview of the Proposed Project and its potential effects, which were identified in the Initial Study. Participants were encouraged to provide verbal comments on the Proposed Project at the scoping meetings, which were recorded by a note taker at the meeting for the DFG and USFS. They were also invited to provide written comments. Approximately 108 individuals attended the scoping meetings in Portola, and another 39 individuals attended the meetings in Sacramento.

The public comments received are summarized in the *Final Scoping Report for the Proposed Lake Davis Pike Eradication Project* (February 2006) and subsequent Errata (June 2006) (Scoping Report), which is available online at: http://www.dfg.ca.gov/northernpike and at local DFG and USFS offices. Thirty-nine comments were received at the scoping meetings and another 123 written comments were received by U.S. mail, email, fax, or hand-delivery.

S.3.3 Agency Consultation and Coordination

The DFG and USFS are actively consulting and coordinating with Federal, State, and local agencies, and tribes that have an interest in the project or could have a role in reviewing and/or providing permit or other approvals for various aspects of the project. The following agencies have been contacted to review the EIR/EIS for the project:

- California Department of Boating and Waterways (DBW)
- California Department of Food & Agriculture
- California Department of Health Services (DHS)

- California Department of Pesticide Regulation (DPR)
- California Department of Toxic Substances Control (DTSC)
- California Department of Transportation (CALTRANS)
- California Department of Water Resources (DWR)
- California Native American Heritage Commission (NAHC)
- Central Valley Regional Water Quality Control Board (RWQCB)
- City of Portola
- National Marine Fisheries Services (NMFS)
- Northern Sierra Air Quality Management District (NSAQMD)
- Office of Environmental Health Hazard Assessment (OEHHA)
- Plumas County
- Plumas County Agricultural Commissioner
- Plumas County Environmental Health Department
- State Historic Preservation Officer (SHPO)
- State Water Resources Control Board (SWRCB)
- US Army Corps of Engineers (USACE)
- US Environmental Protection Agency (USEPA)
- US Fish and Wildlife Service (USFWS)

Many of these agencies attended a consultation meeting and provided information to the DFG and USFS that was considered in the preparation of the Draft EIR/EIS.

S.4 Alternatives Considered and Proposed Project/Proposed Action

Seven project alternatives are described in this document with more detailed discussions in Section 2.

This summary section gives a brief description of each alternative to introduce the reader to the range of actions the alternatives represent. The first alternative is the No Project/No Action alternative. The Proposed Project and four other alternatives involve rotenone treatment of Lake Davis and its tributaries, with Lake Davis being maintained or drawn down to differing volumes of 15,000, 5,000, 35,000, and 48,000 acre-feet, by as early as mid-August 2007. Two alternatives are identified for 15,000 acre-feet, involving reservoir treatment with either a liquid or powdered rotenone formulation. These reservoir volumes are shown on Figure 1-1, Alternative Reservoir Volumes. The seventh alternative is a non-chemical alternative, involving the complete dewatering of the reservoir and its tributaries. The location of the project is addressed in Section 2. An identification of potential permits and other approvals required to implement the project, is included in Section 1.6.3. A summary of each alternative is provided below.

S.4.1 No Project/No Action

No Project/No Action (hereafter called No Project) represents a continuation of the existing reservoir and fishery management practices as of September 2005 into the foreseeable future. These practices are consistent with the current, adopted plan to control and contain pike. The goal of the current plan, known as the *Y2000 Plan* (DFG 2000), is to control the population of northern pike in Lake Davis and to keep the pike contained in the reservoir. No special use permit or forest closure orders would be issued. Recreation activity would continue with declines in angling, similar to recent years.

The *Y2000 Plan* calls for adaptive management, allowing for the periodic assessment of recommendations. The DFG periodically evaluates and assesses progress (DFG 2003a). Due to the fact pike pose a serious threat to aquatic resources in California, future management plan evaluation may result in recommendations to change the Lake Davis fishery management program. Any significant changes to the program would be done in consultation with the Lake Davis Steering Committee, and the general public.

S.4.1.1 Reservoir Operations

Lake Davis is operated by DWR, consistent with its primary purposes of recreation, fish and wildlife enhancement, and water supply. The spillway elevation of the reservoir is 5,775 feet, which provides a capacity of approximately 84,000 acre-feet and a surface area of 4,000 surface acres. Lake Davis is currently managed to operate well below its capacity primarily to minimize the potential for pike escapement. Typically, the reservoir is near-filled each winter-through-spring by capture of seasonal precipitation and snowmelt runoff. Maintenance of minimum downstream releases, typically ranging from 10 to 23 cubic feet per second, dependent on maximum May-June reservoir surface elevation, results in the reservoir normally losing several feet of elevation over the course of summer through fall. Independent diverters take some of this water from Big Grizzly Creek at a point approximately four miles downstream from the dam. In May 2006, DWR approved the Northern Pike Containment System at the outlet of Lake Davis on Big Grizzly Creek.

Water from Lake Davis can be delivered via a direct pipeline to a Plumas County water treatment plant for municipal uses. However, the treatment plant has not operated since 1997, and no water has been delivered from Lake Davis to the treatment plant since then. Construction and approval of a new treatment plant is anticipated as early as mid-to-late 2007. When it is approved, it would be available to receive water deliveries from Lake Davis. (Dwyer, personal communication, 2006) (Hunter, personal communication, 2006)

S.4.1.2 Other Pike Control Measures

The control and containment strategy includes several recommendations outlined in the *Y2000 Plan* (DFG 2000) and the *Y2000 Plan: Three Year Report* (DFG 2003). These reports describe various control and containment measures that have been attempted to control pike in Lake Davis. A summary of these measures is described in Section 2.2.2. Despite the implementation of control and containment measures and experimental procedures from 2000-2002, a 10-fold increase in the pike catch rate has occurred. This suggests that the pike

population in Lake Davis is expanding. Continued use of these control measures is inadequate to compensate for pike reproduction and survival.

S.4.2 Proposed Project/Proposed Action – 15,000 Acre-Feet (Plus Treatment)

Under the Proposed Project, the reservoir would be drawn down to 15,000 acre-feet and a liquid rotenone formulation would be applied throughout the open water of the reservoir, to the reservoir shoreline areas, to tributary streams, and to any pools, ponds, or springs in the watershed potentially containing pike. With a volume of 15,000 acre-feet, the surface elevation of Lake Davis is approximately 5,749 feet and the surface area is approximately 1,331 acres. Project implementation would commence with reservoir drawdown beginning potentially as early as January 2007, followed by rotenone application between mid-August and late October of 2007.

The PNF would issue a special use permit and two forest closures.

S.4.3 Alternative A – 15,000 Acre-Feet (Plus Treatment Including Powder)

Alternative A is similar to the Proposed Project except a powdered form of rotenone (ProNoxfish®) would be used in the reservoir, and liquid rotenone (Noxfish® or CFT Legumine®) would be applied to the tributary streams, pools, ponds, or springs in the watershed that could contain pike. Alternative A was selected to evaluate the use of powdered rotenone, which has a different chemical composition from liquid rotenone and no potential for odor.

The PNF would issue a special use permit and two forest closures.

S.4.4 Alternative B – 5,000 Acre-Feet (Plus Treatment)

Under Alternative B, the reservoir would be drawn down to 5,000 acre-feet and liquid rotenone would be applied throughout the reservoir; to reservoir shoreline areas; to tributary streams; and to any pools, ponds, or springs in the watershed potentially containing pike. At a volume of 5,000 acre-feet, the surface elevation of Lake Davis is approximately 5,738 feet and the surface area is approximately 550 acres. Project implementation would commence with reservoir drawdown beginning potentially as early as January 2007, followed by rotenone application between mid-August and late October of 2007. Alternative B was selected for evaluation because it would require the least amount of rotenone compared with the other alternatives that involve the use of rotenone.

The PNF would issue a special use permit and two forest closures.

S.4.5 Alternative C – 35,000 Acre-Feet (Plus Treatment)

Under Alternative C the reservoir would be drawn down to 35,000 acre-feet and liquid rotenone would be applied throughout the reservoir; to reservoir shoreline areas; to tributary streams; and to any pools, ponds, or springs in the watershed potentially containing pike. The primary differences between Alternative C and the Proposed Project and Alternatives A and B include: the amount of time required for drawdown, the resulting reservoir size (both

surface area and volume), the length of the tributary streams to be treated, the resulting amount of rotenone required, and the project duration, which includes the time from commencement of drawdown, through the treatment period, until Lake Davis is refilled to a 45,000 acre-foot level. At a volume of 35,000 acre-feet, the surface elevation of Lake Davis is approximately 5,760 feet and the surface area is approximately 2,439 acres. Alternative C represents a limited recreation alternative. Under this alternative, the boat ramp at Honker Cove could be extended to allow boat access to the reservoir. The other three boat ramps would not be usable.

The PNF would issue a special use permit and two forest closures.

S.4.6 Alternative D – 48,000 Acre-Feet (Plus Treatment)

Under Alternative D the reservoir would be drawn down to 48,000 acre-feet (from a May-June maximum) and liquid rotenone would be applied throughout the reservoir; to reservoir shoreline areas; to tributary streams; and to any pools, ponds, or springs in the watershed potentially containing pike. Alternative D differs from the other alternatives in the amount of time required for drawdown, the resulting surface area and volume of the reservoir, the length of the tributary streams to be treated, the resulting amount of rotenone required, and the project duration, which includes the time from commencement of drawdown, through the treatment period. Because a volume of 48,000 acre-feet would be maintained, no refilling operations would be required. At a volume of 48,000 acre-feet, the surface elevation of Lake Davis is approximately 5,764 feet, and the surface area is approximately 2,936 acres. Alternative D would permit full boat access to the reservoir, as all ramps would be functional. It is similar to the level of the reservoir for the previous treatment in 1997, and has the highest probability of being accomplished in all water years by August 1.

The PNF would issue a special use permit. A forest closure to protect human health and safety during rotenone application would be issued. A forest closure to protect cultural resources would not be necessary since reservoir levels would not drop below 45,000 acre-feet.

S.4.7 Alternative E – Dewater Reservoir and Tributaries (No Chemical Treatment)

Under Alternative E, the eradication of pike from Lake Davis would be attempted without the use of chemicals by completely draining the reservoir and all water sources flowing into it. Any water-filled depressions within the reservoir footprint, stream channels, overflow areas, or other standing water areas would be drained. This alternative was selected for evaluation because it looked like the most feasible, non-chemical means of eradicating pike. Generally, the dewatering of streams and lakes is a proven and effective method to kill fish. However, the feasibility of dewatering of streams at this scale and setting is questionable. This alternative was brought forward from the alternatives formulation analysis for further evaluation in the EIR/EIS. If feasible, these systems would be kept dry long enough to eliminate all pike. Under this alternative, no piscicides would be used; and, therefore, any potential risks to human health associated with the use of rotenone would be eliminated.

A special use permit would be issued to the DFG by the PNF. Two forest closures would be issued. Instead of a forest closure order to protect human health and safety during rotenone application, the closure would protect humans during intensive construction operations.

S.5 Environmental Concerns

Below is a brief summary of the environmental concerns or areas of controversy by resource, including issues raised by agencies and the public that are addressed in this EIR/EIS. The resources are divided into three categories: physical, biological, and human concerns.

S.5.1 Physical Environment

Surface Water Resources

The following concerns were associated with surface water resources and are addressed in Section 3 of this EIR/EIS:

- Bank erosion on Big Grizzly Creek downstream from Grizzly Valley Dam;
- Tributary incision (head-cutting) on all streams draining to Lake Davis;
- Structural instability of boat ramps; and
- Water quality parameters of turbidity, anoxic lake condition, dissolved oxygen, bacterial levels, reduced flows to Big Grizzly Creek, nutrients, and water temperature.

Groundwater Resources

The following concerns were associated with groundwater resources and are addressed in Section 4 of this EIR/EIS:

- Changes in water levels at private wells and at wells used for public domestic supply; and
- Changes in water quality at private wells and at wells used for public domestic supply.
- Both concerns pertain to wells in close proximity to Lake Davis and to wells used for city of Portola residents.

Air Quality

The following concerns were associated with air quality and are addressed in Section 5 of this EIR/EIS:

- Odors from rotenone and decaying fish;
- Air pollution from equipment;
- Dust from general construction activities;
- Dust from powdered rotenone application; and
- Dust and particulates from exposed lake bottom and traffic on unpaved roads/surfaces.

Noise

The following concerns were associated with noise and are addressed in Section 6 of this EIR/EIS:

- Noise from transportation and staging areas;
- Noise from airboats;
- Noise generated at neutralization stations; and
- Helicopter noise for equipment transport.

S.5.2 Biological Environment

Aquatic Resources

The following concerns were associated with aquatic resources and are addressed in this Section 7.1 of this EIR/EIS:

- Potential for escape of pike to the Central Valley;
- Temporary loss of aquatic habitat in Lake Davis;
- Application of harmful chemicals into Lake Davis and its tributary streams and springs;
- The dewatering of Lake Davis, tributary streams and springs, and Big Grizzly Creek downstream of Lake Davis;
- Accidental spills of chemicals into the environment; and
- Change in flow regime to Big Grizzly Creek downstream of Lake Davis and the Middle Fork Feather River.

Wildlife Resources

The following concerns were associated with wildlife and are addressed in Section 7.2 of this EIR/EIS:

- Exposure of terrestrial wildlife to rotenone through direct contact, ingestion of treated water, or consumption of fish killed by rotenone;
- Impacts associated with the draw down of Lake Davis and the resulting reduction of aquatic and wetland habitats as used by terrestrial wildlife;
- Impacts to fish-eating terrestrial wildlife due to treatment of Lake Davis with rotenone and the temporary reduction of the fish community;
- Impacts to insectivorous terrestrial wildlife due to treatment of Lake Davis with rotenone and the temporary reduction of the aquatic invertebrate community; and
- Impacts to terrestrial wildlife due to disturbance associated with treatment activities at Lake Davis and its tributaries.

Botanical Resources

The following concerns were associated with plants and are addressed in Section 7.3 of this EIR/EIS:

- Loss of terrestrial plants;
- Loss of riparian plants;
- Loss of wetland plants;
- Loss of special-status plants; and
- Spread of noxious weeds.

S.5.3 Human Environment

Land Use and Land Management

The following concerns were associated with land use and land management and are addressed in Section 8 of this EIR/EIS:

- Forest management issues; and
- Grazing.

Aesthetic Resources

The following concerns were associated with aesthetic resources and are addressed in Section 9 of this EIR/EIS:

- Views of exposed lakebed; and
- Appearance of Big Grizzly Creek following neutralization.

Cultural Resources

The following concerns were associated with cultural resources and are addressed in Section 10 of this EIR/EIS:

- Ground disturbance from project activities affecting cultural resources;
- Erosion from reservoir drawdown affecting cultural resources below the water surface; and
- Looting of cultural resources exposed by reservoir draw down.

Recreation Resources

The following concerns were associated with recreation resources and are addressed in Section 11 of this EIR/EIS:

- Displacement of recreation to Frenchman Lake; and
- Loss of tourism at Lake Davis.

Economic Resources

The following concerns were associated with economic resources and are addressed in Section 12 of this EIR/EIS:

- Local economic activity;
- Effect on local fiscal resources;
- Loss in economic value of recreation at Lake Davis;
- Drop in property values;
- Water supply cost and benefits; and
- Statewide economic effect due to reduced commercial and recreational fishing.

Public Services

The following concerns were associated with public services and are addressed in Section 13 of this EIR/EIS:

- Law enforcement;
- Fire protection and other emergency services;
- Domestic public water supply/water treatment; and
- Downstream water supply.

Human and Ecological Health Concerns

The following concerns were associated with human and ecological health concerns and are addressed in Section 14 of this EIR/EIS:

- Effect of use and transport of rotenone and its formulation constituents on human populations;
- Effect of spill of rotenone and its formulation constituents on human populations; and
- Effect of rotenone and its formulation constituents on fish and wildlife species.

Social Issues and Environmental Justice

The following concerns are discussed in Section 15 of this EIR/EIS:

- Demographics of human populations;
- Effects on minority populations; and
- Effects on low-income populations.

S.6 Summary of Environmental Impacts

Table S-1 provides a summary of all of the environmental impacts and mitigation for No Project/No Action, the Proposed Project, and Alternatives A through E. The existing condition sets the baseline against which the alternatives are evaluated for CEQA, while No

Project/No Action is the baseline for comparison of alternatives for NEPA. For most resources, No Project is similar to existing conditions. **Impact statements are presented in their entirety in the resource sections and in Tables S-2 through S-7.** For Table S-1, impact areas or environmental concerns are merely listed using brief terms for ease of comparison. Symbols used in the table for CEQA and NEPA determinations of impact are:

SU	=	Significant and Unavoidable Impact (CEQA)
SM	=	Significant but Mitigable Impact (CEQA)
LS	=	Less than Significant Impact (CEQA)
N	=	No Impact (CEQA, NEPA)
B	=	Beneficial Impact (NEPA)
A	=	Adverse Impact (NEPA)
na	=	Not Applicable
nd	=	Significance Not Determined

For each alternative, Tables S-2 through S-7 list all of the significant adverse impacts under CEQA, both those that are unavoidable and those that are mitigable. For impacts determined to be "significant but mitigable," the mitigation measures are explained in the resource sections and in Tables S-2 through S-7. These measures represent actions the DFG (or other agency) would take to reduce the impact to a level of insignificance. If mitigation is not feasible or practical to implement, or simply not enough to reduce the impact to less than significant, then the impact is "significant and unavoidable." Significance determinations are applicable under CEQA for all impacts except for economic resources and social issues and environmental justice.

S.7 Issues to be Resolved

The USFS is the lead agency under NEPA and will issue a NEPA Record of Decision (ROD) signed by the Beckwourth District Ranger of the USFS Forest Supervisor James M. Pena and decide whether to issue two forest closure orders for the Lake Davis Pike Eradication Project and issue a special use permit to the DFG. The PNF preferred alternative is to issue the special use permit and two forest closure orders.

The DFG is the lead agency under CEQA and will decide whether to certify the EIR/EIS. After certification and consideration of the Final EIR/EIS, the DFG director will decide whether or how to approve or carry out the project. This would involve choosing one of the alternatives or a variation of the alternatives that is within the parameters or decision space of the EIR/EIS, and determining how or whether to mitigate significant effects. See Section 1.4 for more information. At this time, the DFG preferred alternative is the Proposed Project. However, public comments on all of the alternatives and mitigation measures will be considered prior to project approval.

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative						
	No Project Compared to Existing Conditions	Proposed Project	A	B	C	D	E
Water Resources: Geomorphology and Hydrology							
1. Bank Erosion	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
2. Tributary Incision	N	SM, A	SM, A	SM, A	SM, A	LS, A	SM, A
3. Structural Stability of Boat Ramps	N	N	N	N	N	N	N
Surface Water Quality							
1. Elevated turbidity due to erosion of lake sediments	N	SU, A	SU, A	SU, A	SU, A	N	SU, A
2. Anoxic reservoir condition develops earlier in summer	N	SU, A	SU, A	SU, A	SU, A	N	SU, A
3. Reduced dissolved oxygen due to biological oxygen demand	N	LS, A	LS, A	LS, A	LS, A	LS, A	na
4. Elevated bacterial levels associated with decomposing fish	N	LS, A	LS, A	LS, A	LS, A	LS, A	na
5. Reduced flow in Big Grizzly Creek results in decreased dissolved oxygen and increased water temperature	N	SU, A	SU, A	SU, A	SU, A	SU, A	SU, A
6. Disturbance in and near tributary streams results in elevated turbidity, nutrients and/or water temperatures	N	N	N	N	N	N	LS, A

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative						
	No Project Compared to Existing Conditions	Proposed Project	A	B	C	D	E
Groundwater							
1. Public Supply (City of Portola Wells) – Groundwater Levels	N	N	N	N	N	N	N
2. Public Supply (City of Portola Wells) – Groundwater Quality	N	N	N	N	N	N	N
3. Private Supply (Wells in Vicinity of Reservoir) - Groundwater Levels	N	LS, A	LS, A	LS, A	LS, A	N	SM, A
4. Private Supply (Wells in Vicinity of Reservoir) – Groundwater Quality	N	LS, A	LS, A	LS, A	LS, A	LS, A	N
Air Quality							
1. Objectionable odors to sensitive receptors from rotenone application and decaying fish	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
2. Elevated levels of air pollutant emissions from equipment required for application (including dewater)	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
3. Particulate dust from construction-type activities	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
4. Dust from powdered rotenone application	N	na	LS, A	na	na	na	na
Noise							
1. Transportation and Staging	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
2. Airboat Operation	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
3. Neutralization Stations	N	SM, A	SM, A	SM, A	SM, A	SM, A	na
4. Construction Noise	N	N	N	N	N	N	SM, A

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative						
	No Project Compared to Existing Conditions	Proposed Project	A	B	C	D	E
5. Pumps and Generators	N	N	N	N	N	N	SM, A
6. Helicopter Noise	N	N	N	N	N	N	SM, A
Aquatic Resources							
1. Lowering Lake Davis							
Desirable Fish	N	LS, A	LS, A	SU, A	LS, A	N	na
Zooplankton Community	N	LS, A	LS, A	LS, A	LS, A	N	na
Littoral Community	N	SU, A	SU, A	SU, A	LS, A	N	na
Loss of Individual Taxa	N	SU, A	SU, A	SU, A	LS, A	N	na
2. Treatment of Lake Davis							
Desirable Fish	N	SM, A	SM, A	SM, A	SM, A	SM, A	na
Zooplankton Community	N	LS, A	LS, A	LS, A	LS, A	LS, A	na
Littoral Community	N	SU, A	SU, A	SU, A	SU, A	SU, A	na
Loss of Individual Taxa	N	SU, A	SU, A	SU, A	SU, A	SU, A	na
3. Treatment of Tributary Streams							
Desirable Fish	N	SM, A	SM, A	SM, A	SM, A	SM, A	na
Special Status Macroinvertebrates	N	SM, A	SM, A	SM, A	SM, A	SM, A	na
Macroinvertebrate Community	N	LS, A	LS, A	LS, A	LS, A	LS, A	na
Loss of Individual Taxa	N	SU, A	SU, A	SU, A	SU, A	SU, A	na
4. Treatment of Springs and other waters							
Desirable Fish	N	LS, A	LS, A	LS, A	LS, A	LS, A	na
Special Status Macroinvertebrates	N	SM, A	SM, A	SM, A	SM, A	SM, A	na

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative						
	No Project Compared to Existing Conditions	Proposed Project	A	B	C	D	E
Macroinvertebrate Community	N	LS, A	LS, A	LS, A	LS, A	LS, A	na
Loss of Individual Taxa	N	SU, A	SU, A	SU, A	SU, A	SU, A	na
5. Increased Flow in Big Grizzly Creek below Lake Davis							
Desirable Fish	N	SM, A	SM, A	SM, A	SM, A	N	LS, A
Special Status Macroinvertebrates	N	LS, A	LS, A	LS, A	LS, A	N	LS, A
Macroinvertebrate Community	N	LS, A	LS, A	LS, A	LS, A	N	LS, A
Loss of Individual Taxa	N	LS, A	LS, A	LS, A	LS, A	N	LS, A
6. Neutralization of Rotenone at Lake Davis Outlet							
Desirable Fish	N	LS, A	LS, A	LS, A	LS, A	LS, A	N
Special Status Macroinvertebrates	N	LS, A	LS, A	LS, A	LS, A	LS, A	N
Macroinvertebrate Community	N	LS, A	LS, A	LS, A	LS, A	LS, A	N
Loss of Individual Taxa	N	LS, A	LS, A	LS, A	LS, A	LS, A	N
7. Reduced Flow in Big Grizzly Creek below Lake Davis							
Desirable Fish	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
Special Status Macroinvertebrates	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Macroinvertebrate Community	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Loss of Individual Taxa	N	LS. A	LS. A	LS. A	LS. A	LS. A	SU, A

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative						
	No Project Compared to Existing Conditions	Proposed Project	A	B	C	D	E
8. Flow effects on Middle Fork Feather River							
Desirable Fish	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Special Status macroinvertebrates	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Macroinvertebrate Community	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Loss of Individual Taxa	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
9. Dewatering Lake Davis							
Desirable Fish	N	na	na	na	na	na	SU, A
Special Status Macroinvertebrates	N	na	na	na	na	na	LS, A
Macroinvertebrate Community	N	na	na	na	na	na	SU, A
Loss of Individual Taxa	N	na	na	na	na	na	SU, A
10. Dewatering the Tributaries							
Desirable Fish	N	na	na	na	na	na	SU, A
Special Status Macroinvertebrates	N	na	na	na	na	na	SM, A
Macroinvertebrate Community	N	na	na	na	na	na	LS, A
Loss of Individual Taxa	N	na	na	na	na	na	SU, A
11. Dewatering Springs and Other Waters							
Desirable Fish	N	na	na	na	na	na	LS, A
Special Status Macroinvertebrates	N	na	na	na	na	na	SM, A
Macroinvertebrate Community	N	na	na	na	na	na	LS, A

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative						
	No Project Compared to Existing Conditions	Proposed Project	A	B	C	D	E
Loss of Individual Taxa	N	na	na	na	na	na	SU, A
12. Accidental Spill of Harmful Chemicals							
Desirable Fish	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Special Status Macroinvertebrates	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Macroinvertebrate Community	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Loss of Individual Taxa	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
Wildlife Resources							
1. Exposure of terrestrial wildlife to rotenone through direct contact, ingestion of treated water, or consumption of fish killed by rotenone.	N	SM, A	SM, A	SM, A	SM, A	SM, A	N
2. Reduction of aquatic and wetland habitats used by terrestrial wildlife due to drawdown of Lake Davis.	N	SM, A	SM, A	SU, A	SM, A	N	SM, A
3. Impacts to fish-eating terrestrial wildlife due to temporary reduction of the fish community and treatment and/or dewatering of Lake Davis and tributaries.	SU, A	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
4. Impacts to insectivorous terrestrial wildlife due to temporary reduction of the aquatic invertebrate community through treatment and/or drawdown of Lake Davis.	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative						
	No Project Compared to Existing Conditions	Proposed Project	A	B	C	D	E
5. Impacts to terrestrial wildlife due to disturbance associated with treatment and/or water drawdown activities at Lake Davis and its tributaries.	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
Botanical Resources							
1. Temporary loss of non-sensitive terrestrial vegetation	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A
2. Temporary loss of riparian vegetation	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
3. Temporary loss of wetland vegetation	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
4. Direct impacts to special status plant species	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
5. Noxious weed colonization of ground disturbed by project-related actions	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
Land Use							
1. Exposed gap in fencing with Lake Davis drawdown	N	SM, A	SM, A	SM, A	SM, A	N	SM, A
2. Traffic overlap and worker safety from Proposed Project and Freeman Project	N	SM, A	SM, A	SM, A	SM, A	SM, A	SM, A
3. Consistency with federal plans	N	N	N	N	N	N	N
4. Consistency with local plans	N	N	N	N	N	N	N
5. Access to firewood in project area	N	LS, A	LS, A	LS, A	LS, A	LS, A	LS, A

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative													
	No Project Compared to Existing Conditions		Proposed Project		A		B		C		D		E	
6. Coordination with Freeman Project	N		N		N		N		N		N		SM, A	
Aesthetics														
1. Amount of exposed lakebed observable	N		SU, A		SU, A		SU, A		SU, A		N		SU, A	
2. Appearance of Big Grizzly Creek due to neutralization activities	N		LS, A		LS, A		LS, A		LS, A		N		N	
Cultural Resources														
1. Ground Disturbance in Staging Areas	N		SM, A		SM, A		SM, A		SM, A		SM, A		SM, A	
2. Ground disturbance from ramp extension	N		SM, A		SM, A		SM, A		SM, A		N		SM, A	
3. Erosion from lake drawdown	N		SM, A		SM, A		SM, A		SM, A		N		SM, A	
4. Looting and vandalism	N		LS, A		LS, A		LS, A		LS, A		N		LS, A	
Recreation														
1. Loss of Recreation Use at Lake Davis	SU, A		SM, A		SM, A		SM, A		SM, A		LS, A		SU, A	
2. Crowding at Frenchman Lake	N		SM, A		SM, A		SM, A		SM, A		N		SM, A	
3. Constraints on Big Grizzly Creek Recreation	N		SM, A		SM, A		SM, A		SM, A		LS, A		SM, A	
Economics	Short Term	Overall	Short Term	Overall	Short Term	Overall	Short Term	Overall	Short Term	Overall	Short Term	Overall	Short Term	Overall
1. Local Economic Activity (Output, Income, and Employment)	B	A	A	B	A	B	A	A	A	B	A	B	A	A
2. Fiscal Resources	B	A	A	B	A	B	A	A	A	B	A	B	A	A
3. Local Property Values	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative													
	No Project Compared to Existing Conditions		Proposed Project		A		B		C		D		E	
4. Economic Values – Recreation	B	A	A	B	A	B	A	A	A	B	A	B	A	A
5. Water Supply Costs and Benefits	N	N	A	A	A	A	A	A	A	A	A	A	A	A
6. Statewide Economic Activity	A	A	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Public Services														
1. Law Enforcement	SU, A		LS, A		LS, A		LS, A		LS, A		LS, A		LS, A	
2. Fire Protection and Other Emergency Services	N		LS, A		LS, A		LS, A		LS, A		LS, A		LS, A	
3. Solid Waste Disposal	N		LS, A		LS, A		LS, A		LS, A		LS, A		LS, A	
4. Domestic Public Water Supplies	N		SM, A		SM, A		SM, A		SM, A		SM, A		SM, A	
5. Downstream Water Supplies	SU,A		SM, A		SM, A		SM, A		SM, A		SM, A		SM, A	
Human and Ecological Health Concerns, Environmental Concerns														
1. Toxicity effects to non-target fish	N		LS, A		LS, A		LS, A		LS, A		LS, A		N	
2. Toxicity effects to aquatic invertebrates	N		SU, A		SU, A		SU, A		SU, A		SU, A		N	
3. Toxicity effects on amphibians and reptiles	N		SM, A		SM, A		SM, A		SM, A		SM, A		N	
4. Toxicity effects on terrestrial and avian wildlife	N		N		N		N		N		N		N	
5. Ecological effects from dead fish	N		LS, A		LS, A		LS, A		LS, A		LS, A		N	
6. Toxicity effects to humans from surface water exposure	N		LS, A		LS, A		LS, A		LS, A		LS, A		N	
7. Toxicity effects to humans from sediment exposure	N		LS, A		LS, A		LS, A		LS, A		LS, A		N	

Table S-1. Summary Comparison of Impacts of Alternatives

Affected Resource and Area of Potential Impact	Alternative													
	No Project Compared to Existing Conditions		Proposed Project		A		B		C		D		E	
8. Toxicity effects to humans from drinking water exposure via wells	N		LS, A		LS, A		LS, A		LS, A		LS, A		N	
9. Toxicity effects to humans from inhalation exposure	N		SM, A		LS, A		SM, A		SM, A		SM, A		N	
10. Impacts to humans from odors	N		LS, A		LS, A		LS, A		SM, A		SM, A		N	
11. Neutralization impacts on human and ecological health, Options 1 and 2	N		N		N		N		N		N		N	
12. Neutralization impacts on human and ecological health, Options 3 and 4	N		LS, A		LS, A		LS, A		LS, A		LS, A		N	
13. Effects of fugitive rotenone dust on wildlife	N		N		SM, A		N		N		N		N	
14. Effects of fugitive rotenone dust on humans	N		N		SM, A		N		N		N		N	
Social Issues & Environmental Justice	Short Term	Overall	Short Term	Overall	Short Term	Overall	Short Term	Overall	Short Term	Overall	Short Term	Overall	Short Term	Overall
1. Recreation economy impacts on low-income population	N	A	A	B	A	B	A	B	A	B	A	B	A	B

Key:

A = Adverse Impact (NEPA)
B = Beneficial Impact (NEPA)
LS = Less than Significant Impact (CEQA)
N = No Impact (CEQA, NEPA)
na = Not Applicable (Potential statewide economic impacts associated with pike escapement were only analyzed for the No Project/No Action alternative.)
nd = Significance Not Determined
SM = Significant but Mitigatable Impact (CEQA)
SU = Significant and Unavoidable Impact (CEQA)

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Water Resources: Geomorphology and Hydrology			
1. Tributary Incision	Impact H-2: During the dewatering and refill period, there is a potential for tributary head-cutting for at least three runoff seasons. The impact of tributary head-cutting is significant but mitigable.	Mitigation H-2: Head-cutting could be mitigated during refill by establishing a monitoring program, prior to dewatering and continuing until the reservoir elevation is at or above 5,763.5 feet elevation, to identify new or migrating head-cuts. Then, after the reservoir has refilled, any new head-cuts identified by the monitoring program would be repaired.	Less than Significant
Surface Water Quality			
1. Elevated turbidity due to erosion of lake sediments	Impact WQ-1: Elevated turbidity resulting from erosion caused by head-cutting of tributaries and incision of reservoir sediments and organic deposits is a significant and unavoidable adverse impact.	None available	Not applicable
2. Anoxic reservoir condition develops earlier in summer	Impact WQ-2: Anoxic reservoir condition develops earlier in the summer season than under No Project. The adverse impact is significant and unavoidable.	None available	
3. Reduced flow in Big Grizzly Creek results in decreased dissolved oxygen and increased water temperature	Impact WQ-5: Reduced flows in Big Grizzly Creek during the treatment period (under the Proposed Neutralization Method and Options A and B) could result in decreased dissolved oxygen concentrations and increased water temperatures in Big Grizzly Creek. This adverse impact is significant and unavoidable.	None available	Not applicable
Noise			
1. Airboat Operation	Impact N-2: Operating airboats would increase local noise levels during chemical application. The adverse impact is significant but mitigable.	Mitigation N-2: Airboat operators would be prohibited from operating the vessels at high power, and the Department of Fish and Game shall implement feasible and appropriate measures to ensure this with written operating procedures. These measures would ensure that the proposed airboats use the lowest speed and power setting necessary for the effective application of rotenone. The Department of Fish and Game shall respond to complaints of noise from airboat operations during rotenone application. Complaints filed with the Department of Fish and Game and the approach used to resolve the complaint shall be reported and logged.	Less than significant
2. Neutralization Stations	Impact N-3: Generators/engines at neutralization below the dam would increase noise levels near sensitive receptors. The adverse impact is significant but mitigable.	Mitigation N-3: The Department of Fish and Game shall properly maintain and tune engines of all pumps and maintain properly functioning mufflers on all internal combustion engines (tanker trucks) to minimize noise emissions. The Department of Fish and Game or its designee shall respond to complaints of noise caused by neutralization station operations in accordance with mitigation measures. Complaints filed with a designee and the approach used to resolve the complaint shall be reported to the Department of Fish and Game.	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Aquatic Resources			
3. Lowering Lake Davis a. Littoral Community	Impact AR-3: The impacts of the Proposed Project would be considered significant and unavoidable on the littoral macroinvertebrate communities, but less than significant on the limnetic (zooplankton) communities. The timeframe required for the littoral invertebrate community to re-establish may exceed two years, based on monitoring following the 1997 treatment.	None available	Not applicable
b. Loss of Individual Taxa	Impact AR-4: The Proposed Project may result in the loss of one or more species, as not all species may be observed in sampling within 2 years after treatment (DFG 2006d). There are no known mitigation measures to offset this impact. This impact would be significant and unavoidable.	None available	Not applicable
4. Treatment of Lake Davis a. Desirable Fish	Impact AR-5: The Proposed Project would have significant but mitigable impacts to desirable fish species.	Mitigation AR-5: Implement the Fisheries Management Plan (Appendix G).	Less than Significant
b. Littoral Community	Impact AR-7: The Proposed Project would have significant and unavoidable impacts to littoral invertebrate communities, as the time for these communities to fully re-establish may exceed two years and no effective mitigation measures are known. Impacts to zooplankton communities would be less than significant.	None available	Not applicable
c. Loss of Individual Taxa	Impact AR-8: The Proposed Project may result in the loss of one or more species, as not all species may be observed in sampling within two years after treatment (DFG 2006d). There are no known mitigation measures to offset this impact. This impact would be significant and unavoidable.	None available	Not applicable
5. Treatment of Tributary Streams a. Desirable Fish	Impact AR-9: The impacts of the Proposed Project on desirable fish species would be significant but mitigable, as the application of rotenone is anticipated to kill all trout and many other fish species in tributary streams.	See mitigation for Impact AR-5.	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
b. Special Status Macroinvertebrates	Impact AR-10: The impacts of the Proposed Project on special status invertebrate species would be significant but mitigable. The amphibious caddisfly, *D. bethula*, is known to occur in Big Grizzly, Old House, and Cow creeks and would be affected by the treatment.	Mitigation AR-10a: The California Department of Fish and Game would continue their systematic sampling program to identify waters with special status invertebrate species prior to treatment through the winter of 2006.	Less than Significant
		Mitigation AR-10b: To minimize the effects of treatment on *D. bethula,* and other special status species that may be present, the California Department of Fish and Game would sample streams for pike, upstream of any fish passage barriers, before treatment. Sampling would be conducted periodically in 2006 and 2007 before treatment would occur, if this action is approved. Sampling would be done carefully to provide a high assurance that fish of any species are not present. If there is a high degree of certainty that fish are not present, the California Department of Fish and Game would not treat these waters.	Less than Significant
		Mitigation AR-10c: In isolated waters where fish are not present and special status macroinvertebrate species are known or suspected to be present, the California Department of Fish and Game would install exclusionary fencing or other devices to prevent fish from entering these habitats subsequent to sampling, unless in the California Department of Fish and Game's determination, such devices are unlikely to be successful. This measure is intended to maintain these habitats in a fishless state, so that treatment is unnecessary and that they can be used as a source area for recolonization.	Less than Significant
		Mitigation AR-10d: Waters where special status macroinvertebrate species are known to be present would be evaluated on a case-by-case basis. If they must be treated, the lowest effective concentration of rotenone and shortest exposure possible to affect a 100 percent kill on pike would be used. A low rotenone concentration for a short duration should have less effect on macroinvertebrates than a high concentration and a longer duration (Whelan 2002).	Less than Significant
		Mitigation AR-10e: In waters where *D. bethula* is found, treat during September/October. During this time, *D. bethula* is in pupal stage buried in the bank and is not as sensitive to streamborn toxins. The life history and timing of the other special status macroinvertebrates that are potentially present are poorly known, and similar specifications cannot be made for these species.	Less than Significant
		Mitigation AR-10f: In waters where the density of special status species is sufficient to allow 30 or more individuals to be collected, the California Department of Fish and Game would create refugia in tanks or other suitable holding facilities for these special status macroinvertebrates, as feasible. The collected individuals would be held in these refugia for the duration of the treatment and then released back to their natal environment. This mitigation measure is untested and its feasibility under the various circumstances that could be encountered is unknown.	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
c. Loss of Individual Taxa	Impact AR-12: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the extent of the treatment area and the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
6. Treatment of Springs and other waters			
a. Special Status Macroinvertebrates	Impact AR-14: The Proposed Project would have significant but mitigable impacts to the amphibious caddisfly, *D. bethula*, if springs in which it occurs are treated. The amphibious caddisfly is known to occur in two unnamed springs. This impact would also occur on other special status species that could potentially be present, including springsnails.	See mitigation for Impact A-10.	Less than Significant
b. Loss of Individual Taxa	Impact AR-16: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
7. Increased Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-17: Impacts from the Proposed Project would be significant but mitigable on desirable fish species. The young-of-year would be substantially reduced or lost. This impact would be substantially less than impacts resulting from dewatering the stream as described for Neutralization Option 1 (described below).	Mitigation AR-17: The California Department of Fish and Game will restock desirable species from all year classes in Big Grizzly Creek below Lake Davis as described in the Fisheries Management Plan, Appendix G, subsequent to treatment and neutralization.	Less than Significant
8. Reduced Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-23: The impacts from the Proposed Project would be significant but mitigable on desirable fish species.	Mitigation AR-23: Same as for Impact AR-1. Desirable fish species would be stocked following neutralization in accordance with the Fisheries Management Plan, Appendix G.	Less than Significant
Wildlife Resources			
9. Exposure of terrestrial wildlife to rotenone through direct contact, ingestion of treated water, or consumption of fish killed by rotenone.	Impact TW-1: The application of rotenone to habitats potentially occupied by mountain yellow-legged frog, foothill yellow-legged frog, and northwestern pond turtle may result in mortality to individuals. The adverse impact is significant but mitigable.	Mitigation TW-1: Due to the potential susceptibility of the mountain yellow-legged frog, foothill yellow-legged frog, and northwestern pond turtle to the effects of rotenone, additional surveys for these species are to be conducted in all areas of suitable habitat in tributary streams to Lake Davis that would be treated with rotenone. These surveys are to be conducted in accordance with standard protocols (DFG 2004c and DFG 2006g) during the same year of treatment and prior to the proposed application of rotenone. If any of these species are found within the proposed treatment area, a concerted effort will be made to capture as many individuals as possible beginning 2 weeks prior to treatment. These individuals	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		would be transported and released in suitable habitat in the immediate project area that will not be treated with rotenone, or held for release where captured, following dissipation of the rotenone. Prior to transplantation of any animals to an adjacent waterbody, amphibians at both the source and donor sites will be tested for chytrid fungus (*Batrachochytrium dendrobatidis*). If animals from Lake Davis test positive, they will not be transplanted. If the proposed recipient site tests positive, alternate recipient sites should be screened until a site is found where chytrid fungus is absent. Decisions whether to hold animals or where they are to be transplanted will be done in coordination with USFS and DFG biologists. The adverse impact is significant but mitigable.	
10. Reduction of aquatic and wetland habitats used by terrestrial wildlife due to drawdown of Lake Davis.	Impact TW-2: The drawdown of Lake Davis could result in altered habitats used by various terrestrial wildlife species, including a reduction in the surface area of the reservoir used as foraging habitat by the bald eagle and osprey, and increased predation and reduced habitat for nesting and migrating Canada geese and other waterfowl. The adverse impact is significant but mitigable.	Mitigation TW-2: See below, under "Impacts to fish-eating terrestrial wildlife due to the temporary reduction of fish community", Mitigation TW-4d, regarding implementation of a supplemental bald eagle feeding program.	Less than Significant
	Impact TW-3: The drawdown of Lake Davis to the proposed water volume level could result in a land or shallow-water connection to the island in Lake Davis, that is used as a colonial nesting site by California gulls. The loss of the separation between the island and shore prior to completion of the gulls nesting period could allow predators access to the island when nesting gulls and their chicks are highly vulnerable. Refill of the reservoir to a level that would provide a water barrier around the island may occur prior to the first year post-treatment, or it may take four or five years. The adverse impact is significant but mitigable.	Mitigation TW-3: To maintain a separation between the island and shore of Lake Davis and deter mammalian predators from accessing the breeding colony of California gulls, a fence, of appropriate height and mesh to exclude coyotes, will be constructed across the emerging low water connection to the island as the surface level of the reservoir reaches approximately 5,760 feet. The fence will be checked at least every third day while the waters recede to ensure that its integrity is maintained, and it will be extended as needed to reach into the water. The fence would be in place as long as gull chicks remain associated with their nests (approximately to August 1). In the year(s) following treatment, the fence would continue as a barrier to prevent mammalian predators from reaching the island until there is an adequate water separation for the island (at or above approximately 5,760 feet surface elevation). If gulls do not nest by May 31 the fence would no longer be needed during that year.	Less than Significant
11. Impacts to fish-eating terrestrial wildlife due to temporary reduction of the fish community and treatment and/or dewatering of Lake Davis and tributaries.	Impact TW-4: The drawdown and/or treatment of Lake Davis with rotenone would result in a temporary loss of the primary food base for bald eagles and ospreys utilizing the reservoir and may contribute to nest failure for territories associated with Lake Davis. Initiating rotenone treatment prior to September 1 may constitute disturbance to nesting eagles due to the loss of the fishery prey base. The adverse impact is significant but mitigable.	Mitigation TW-4a: Due to potential project-related adverse effects to a species listed as threatened under the ESA, interagency consultation with USFWS on the bald eagle would be completed prior to implementation of the project. Any and all terms and conditions that would be established by USFWS in their biological opinion would be fully implemented as part of the Proposed Project.	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		Mitigation TW-4b: An aggressive fish-stocking program would be implemented at Lake Davis with an emphasis on large fish to quickly restore the eagle and osprey prey base at Lake Davis to pre-treatment fish densities and size-class distribution. Stocking would be initiated in the fall following treatment of the reservoir and continue until pre-treatment fish densities are maintained, as indicated by results of fisherman creel surveys.	Less than Significant
		Mitigation TW-4c: If rotenone treatment occurs prior to September 1 and fledgling eagles are present at Lake Davis, a supplemental feeding program would be established whereby food is made available to the eagles until the time at which they would normally disperse. Dead fish (rotenone-killed fish may be used) are to be provided to eagles at two sites within or adjacent to each active nesting territory beginning before all dead fish are removed from the reservoir during cleanup. Several dead fish are to be placed early each morning on the ground near the shoreline or on an anchored raft floated on the water in view of a suitable eagle perch in the area where nesting or fledgling eagles have been active. Food would be provided every five out of seven days while skipping no more than one day in succession. Supplemental feeding would continue until at least September 1 and when all fledgling eagles are capable of dispersing from the area.	Less than Significant
		Mitigation TW-4d: A bald eagle supplemental feeding program would be implemented the year following rotenone treatment whereby food is made available to the eagles beginning at ice-out and extending until August 31 or as long as there is an active eagle nest at Lake Davis. Dead fish (rotenone-killed fish may be used) are to be provided to eagles at two sites within or adjacent to each active nesting territory. Several dead fish are to be placed early each morning on the ground near the shoreline or on an anchored raft floated on the water in view of a suitable eagle perch in the area where nesting or fledgling eagles have been active. Food would be provided every five out of seven days while skipping no more than one day in succession. The supplemental feeding program would continue the second (and subsequent) year(s) following treatment until reservoir levels are within 90 percent of the pre-drawdown surface area (2,554 surface acres; 37,936 acre-feet volume; 5,761 feet surface elevation) if there are two active eagle nests at the reservoir, or until 75 percent of pre-draw-down surface area (2,129 surface acres; 28,355 acre-feet volume; 5,757 feet elevation) is reached if one active eagle nest is present.	Less than Significant
		Mitigation TW-4e: Monitoring of eagle nesting status and productivity at Lake Davis would be conducted by the DFG (or coordinated through the PNF) for a minimum of two breeding seasons following project implementation and would include one year following cessation of the supplemental feeding program, continuing until normal eagle productivity is documented.	Less than Significant
2. Impacts to insectivorous terrestrial wildlife due to temporary reduction of the aquatic invertebrate community through treatment and/or drawdown of Lake Davis.	Impact TW-5: The temporary loss of aquatic insects and their terrestrial forms may impact terrestrial species of insectivorous wildlife, including amphibians, reptiles, bats, and birds. The willow flycatcher is highly dependant on	Mitigation TW-5: If dewatering activities and/or rotenone treatment would occur prior to September 1 along tributary streams of Lake Davis where suitable willow flycatcher habitat is found, pre-treatment surveys would be completed to document the absence of nests or fledglings in the area. If nesting/fledgling birds are found,	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	the aquatic-derived invertebrate prey base and suitable habitat is present in the project area. Activities related to the dewatering of streams and/or rotenone treatment may be initiated prior to September 1 and may overlap with the end of the willow flycatcher's nesting period. The adverse impact is significant but mitigable.	drawdown activities (e.g., piping, pumping, and/or removal of vegetation) and/or treatment of the tributary stream with rotenone where nesting/fledging flycatchers are located will be postponed until after August 31.	
3. Impacts to terrestrial wildlife due to disturbance associated with treatment and/or water drawdown activities at Lake Davis and its tributaries.	Impact TW-6: Activities associated with water drawdown and rotenone treatment of Lake Davis and its tributaries may cause disturbance to: bald eagles and great gray owls if these activities are initiated prior to September 1 in the vicinity of active nest-sites (e.g., Jenkins Cove area); to the goshawk if activities begin prior to September 15 within occupied PACs (e.g., Lightning Point vicinity); and to willow flycatchers prior to September 1 along tributary streams where suitable habitat is located. The adverse impact is significant but mitigable.	Mitigation TW-6a: If staging areas, located within the vicinity of Jenkins Cove (or within 0.5 mile of an occupied bald eagle primary use area or great gray owl PAC), are used prior to September 1, surveys for bald eagles and/or great gray owls will be completed to determine presence and nesting/post-nesting status. If bald eagles or great gray owls are actively using the area, an 0.5-mile (800-meter) buffer shall be established around active bald eagle nest sites and a 0.25-mile buffer around active great gray owl nest sites (which includes the presence of post-fledging birds). These buffers will be delineated as necessary using flagging or other methods to assure that there are no major disturbances to eagles or owls associated with the project within the buffer.	Less than Significant
		Mitigation TW-6b: If staging areas located within one mile of Lightning Point are used prior to September 15, surveys of the established northern goshawk PAC will be completed to determine presence and nesting/post-nesting status, and if occupied, to preclude project-related activities from the designated PAC, as necessary.	Less than Significant
		Mitigation TW-6c: If dewatering activities and/or rotenone treatment would occur prior to September 1 along tributary streams of Lake Davis where suitable willow flycatcher habitat is found, pre-treatment surveys will be completed to document the absence of nests or fledglings in the area. If nesting/fledgling birds are found, drawdown activities requiring the presence of personnel along the tributary streams and/or treatment of the tributary streams with rotenone where nesting/fledging flycatchers are located will be postponed until after August 31.	Less than Significant
Botanical Resources			
1. Temporary loss of riparian vegetation	Impact VEG-2: The temporary loss of riparian vegetation is a significant but mitigable adverse impact.	Mitigation VEG-2a: Access routes, stream access points, and application sites shall be flagged and DFG staff shall be instructed to use only flagged access routes.	Less than Significant
		Mitigation VEG-2b: To the extent consistent with correct implementation of the project, access routes shall be located away from the riparian zone.	Less than Significant
		Mitigation VEG-2c: DFG staff shall be trained to minimize impact to this vegetation during rotenone application at these sites.	Less than Significant
		Mitigation VEG-2d: A spill prevention, containment, and clean-up plan shall be prepared and shall be implemented when the project begins in order to reduce the potential for impacts from accidental spills.	Less than Significant
		Mitigation VEG-2e: Within the PNF, all relevant management practices specified in the PNF LRMP and the SNFPA shall be implemented. Such management practices may require buffers from 200 to 600-feet-wide around streams, where direct access is not required to implement the project.	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
2. Temporary loss of wetland vegetation	Impact VEG-3: The temporary loss of wetland vegetation is a significant but mitigable adverse impact.	Mitigation VEG-3a: Wetland vegetation in the vicinity of project activities that can be avoided shall be flagged and temporarily fenced to prevent accidental impacts.	Less than Significant
		Mitigation VEG-3b: DFG staff shall be trained to minimize impact to this vegetation during rotenone application at these sites.	Less than Significant
		Mitigation VEG-3c: A spill prevention, containment, and clean-up plan shall be prepared and shall be implemented when the project begins in order to reduce the potential for impacts from accidental spills.	Less than Significant
		Mitigation VEG-3d: Within the PNF, all relevant management practices specified in the PNF LRMP and the SNFPA shall be implemented. Such management practices may require buffers of 100 feet or more around springs, seeps, and pools where direct access is not required to implement the project.	Less than Significant
3. Direct impacts to special status plant species	Impact VEG-4: Direct adverse impacts to special status plant species are significant but mitigable.	Mitigation VEG-4a: Pre-project surveys shall be conducted at all potential disturbance areas to determine the presence of any special status plant species at the project sites.	Less than Significant
		Mitigation VEG-4b: All identified locations of special status plant species that can be avoided shall be flagged and species-appropriate buffer areas shall be fenced for avoidance prior to project implementation.	Less than Significant
		Mitigation VEG-4c: A worker environmental awareness training shall be conducted prior to project implementation. This training shall include information on identification and avoidance measures for special status species potentially present in the project area.	Less than Significant
		Mitigation VEG-4d: A spill prevention, containment, and clean-up plan shall be prepared before the project is implemented.	Less than Significant
		Mitigation VEG-4e: Within the PNF, all relevant management practices specified in the PNF LRMP and the SNFPA shall be implemented. Such management practices may include the requirement that all areas requiring seeding or planting shall use only locally collected native seed sources, if available.	Less than Significant
4. Noxious weed colonization of ground disturbed by project-related actions	Impact VEG-5: Noxious weed colonization of ground disturbed by Project-related actions is a significant but mitigable adverse impact.	Mitigation VEG-5a: A worker environmental awareness training shall be conducted prior to Project implementation. This training shall include information on identification and avoidance measures for noxious weed species of concern in the project vicinity.	Less than Significant
		Mitigation VEG-5b: In areas with known infestations within areas where soil disturbance is necessary, vegetation and topsoil shall be graded and stockpiled on the side of the site, adjacent to the area from which they were stripped, in order to isolate soil that may contain noxious weed seeds. This action would reduce the potential for construction equipment to transport seeds, roots, or rhizomes from site to site.	Less than Significant
		Mitigation VEG-5c: Reclamation of disturbed areas shall be implemented immediately following construction.	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		Mitigation VEG-5d: Fertilizer shall not be applied to reclaimed areas with known weed infestations, since nutrients can enhance the growth of weeds.	Less than Significant
		Mitigation VEG-5e: Straw bales used for sediment barriers or mulch shall be certified weed-free.	Less than Significant
		Mitigation VEG-5f. Within the PNF, all relevant management practices specified in the PNF LRMP and the SNFPA shall be implemented. These management practices may include cleaning all off-road equipment and vehicles used for project implementation at a vehicle washing station or steam cleaning facility before the equipment and vehicles enter the project area, and cleaning all off-road equipment prior to leaving areas infested with noxious weeds.	Less than Significant
Land Use			
1. Exposed gap in fencing with Lake Davis drawdown	Impact LU-1: Containment of cattle in the Grizzly Valley allotment as reservoir drawdown falls below the current fence extending into Lake Davis. This adverse impact is significant but mitigable.	Mitigation LU-1: The DFG shall contribute materials and labor to the appropriate range allotment permittees to construct additional fencing to keep cows from moving to other pastures.	Less than Significant
2. Traffic overlap and worker safety from Proposed Project and Freeman Project	Impact LU-2: Overlap in project areas and traffic from the Proposed Project and Freeman Project is a significant but mitigable adverse impact.	Mitigation LU-2a: The DFG shall obtain a detailed work schedule from the Forest Service timber sale layout coordinator for the Freeman Creek project. The schedule will identify the treatment units and roads in which timber harvest operators will be working.	Less than Significant
		Mitigation LU-2b: The DFG shall provide or arrange for traffic control during times when there is timber harvesting along roads used by DFG crews.	Less than Significant
Aesthetics			
1. Amount of exposed lakebed observable	Impact A-1: A band of bare shoreline would be visible as foreground and middleground views to recreationists and the general public for up to eight months during the year treatment would occur and 5 to 25 months for refill. The impact on aesthetics would be significant and unavoidable.	None available	Not applicable
Cultural Resources			
1. Ground Disturbance in Staging Areas	Impact CR-1: Proposed Project activities in staging areas, storage areas, and tributary access areas could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	Mitigation CR-1: Ground disturbance shall be mitigated by avoidance. Areas to be disturbed will be surveyed prior to work in areas of potential direct effect. Any identified resources will be marked for avoidance using orange fencing and/or tape with a 10 to 15 foot buffer to protect the site from any associated activities during the treatment period, and crews will be informed of the resource.	Less than Significant
2. Ground disturbance from ramp extension	Impact CR-2: Extension of the boat ramp in order to allow boat access to Lake Davis as reservoir levels drop could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	Mitigation CR-2: Ground disturbance from boat ramp extension shall be mitigated by avoidance. There are three potential boat ramps for reservoir access. Once a boat ramp for reservoir access has been chosen, a qualified archaeologist shall survey any areas impacted by ramp extension. If cultural resources that are eligible for the National Register could be impacted by ramp extension, an alternate access ramp will be used. If an alternate ramp is not available, mitigation of a National Register eligible site will be determined by consultation with the DFG, the USFS, the	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		State Historic Preservation Officer, and appropriate Native American tribes and may include compensation measures such as full investigation of uncovered sites.	
3. Erosion from lake drawdown	Impact CR-3: The dewatering of the reservoir could potentially cause erosion to potential cultural resource sites. The impact from erosion is significant but mitigable.	Mitigation CR-3: Erosion shall be mitigated by monitoring, followed by agency consultations and appropriate actions. Any previously recorded sites will be located and regularly monitored during the dewatering process by a qualified archaeologist to determine if erosion due to reservoir dewatering, stream movements, or weather is impacting the sites. If cultural resources that are eligible for the National Register were being impacted by erosion, mitigation will be determined by consultation with the DFG, the USFS, the State Historic Preservation Officer, and appropriate Native American tribes and may include compensation measures such as full investigation of uncovered sites.	Less than Significant
Recreation			
1. Loss of Recreation Use at Lake Davis	Impact R-1: The direct adverse impact due to loss of recreation use at Lake Davis, including loss for up to two seasons, is significant but mitigable.	Mitigation R-1: The DFG shall partner with the PNF in promoting recreation at Lake Davis by contributing $30,000 in funding to conduct a feasibility analysis for design and construction of a trail on the east side of Lake Davis. There is a plan for the PNF (Schaber, personal communication, 2006) to seek funding from a Rails-to-Trails grant for a trail around Lake Davis. Support from the DFG could accelerate implementation of this trail project, and meet latent demand for hiking and walking. In addition, the DFG shall construct and install two or three interpretive panels highlighting the biological resources of the Lake Davis area and discussing the risks of non-native invasive species. The DFG shall also construct two interpretive panels for installation along the River Walk near the City of Portola. The DFG shall also provide interpretative staff for at least the duration of the two seasons in which impacts are expected to occur to support local educational programs on the biology of the reservoir and its vicinity.	Less than Significant
2. Crowding at Frenchman Lake	Impact R-2: Indirect adverse impact due to increased crowding and physical deterioration of recreation facilities at Frenchman Lake is significant but mitigable.	Mitigation R-2: A permanent toilet shall be installed at the overflow campground (near Big Cove campground) at Frenchman Lake. The DFG shall contribute a maximum of $15,000 for purchase and installation of this toilet. The DFG shall, in collaboration with local representatives, also prepare a brochure highlighting recreational opportunities in eastern Plumas County.	Less than Significant
3. Constraints on Big Grizzly Creek Recreation	Impact R-3: Under the Proposed Project there could be no days when the Grizzly Ice Pond is useable for recreation. This would be a significant adverse impact, but can be mitigated to less than significant.	Mitigation R-3: Develop a reservoir operations plan (in coordination with DWR) that would restrict releases from Grizzly Valley Dam to approximately 30 cfs from about June 1 through August. If flow is reduced by 100 cfs for two months (mid-June to mid-August), an additional 12,000 acre-feet would remain in the reservoir on September 1. Alternatively, if flows significantly exceed 30 cfs install a safety boom at the Grizzly Ice Pond Dam. If flows exceed 30 cfs, work in cooperation with the DWR to evaluate the reactivation of a bypass channel allowing flows to be diverted around the Ice Pond. If feasible and necessary, work in cooperation with the DWR to conduct the work necessary to reactivate the bypass channel.	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Public Services			
1. Domestic Public Water Supplies	Impact PS-4: There is the potential for the Proposed Project to delay use of Lake Davis as a domestic water supply source for the City of Portola and GRLID by delaying water deliveries to the new water treatment plant, depending on when the water treatment plant is constructed and approved for use. This could result in both entities having to remain on their community groundwater systems for a longer period of time than they would without the project. Based on the capacity of these systems, there may not be sufficient water supplies in City of Portola and the GLRID service area to meet water demands during the 4-month period corresponding to project implementation (treatment and refill to 5,750 acre feet). Further, the City of Portola could have to continue use of its community groundwater system, which currently exceeds Federal standards for arsenic. These temporary adverse impacts are significant, but mitigable.	Mitigation PS-4: If implementation of the project results in delays to the City of Portola and GLRID to use Lake Davis as a municipal water supply source, the following mitigation options will be implemented: The DFG shall, in coordination with the City of Portola and GLRID, temporarily provide replacement water supplies to community residents if needed until water from Lake Davis is available for domestic use. Options may include trucking in water, construction of additional storage facilities, developing groundwater wells, or provide funding to the City of Portola to install, an advanced filtration system on existing community groundwater wells to lower arsenic levels below Federal standards.	Less than Significant
2. Downstream Water Supplies	Impact PS-5: On a temporary basis, downstream water users would be adversely affected during treatment and neutralization period as a result of reduced water flows from Grizzly Valley Dam under the Proposed Project/Proposed Action. This represents a significant, but mitigable, adverse water supply impact.	Mitigation PS-5: The following measures will be implemented to minimize impacts on downstream water right holders and related uses: ▪ The DFG shall survey Big Grizzly Creek (downstream from the dam) to identify all riparian diversions potentially affected by the project. All identified water users, including riparian and appropriated right holders, will be contacted by the DFG/DWR prior to the proposed treatment to determine the nature and amount of water diversions. In addition, all landowners downstream of Lake Davis and adjacent to Big Grizzly Creek will be informed about the proposed pike eradication effort; ▪ The DFG will enter into an agreement with the DWR to provide assurance that downstream parties are provided with water they are entitled to under any agreements with the DWR, and the DWR is not liable for impacts as a result of nonperformance under those water supply agreements; and ▪ The DFG shall, in coordination with the land holders, temporarily provide alternative water sources to all water users along Big Grizzly Creek to meet existing water demands. Options may include providing trucked water to riparian users or assisting with private well pumping costs. In cooperation with water right holders at or downstream from Grizzly Ice Pond, the DFG shall provide mitigation on a case-by-case basis based on the parameters of each diversion and related land uses. Options may include: ▪ Investigating the option of securing water supplies stored at Grizzly Ice Pond to help meet the requirements of downstream water right holders; however, the quantity of water stored at the Ice Pond would not likely be sufficient to meet all	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		downstream requirements. Therefore, additional provisions will be made as needed, as described below; ▪ Ramelli Diversion. Temporarily provide water and/or a water equivalent to Ramelli pastures consistent with the terms of the USFS grazing permit. Options include: (1) providing partial replacement water supplies; (2) providing an alternative green pasture if available; and/or (3) providing hay and/or other supplemental feed to address the loss in pasture irrigation; ▪ Valberde Diversion. Temporarily accommodate for lost water supplies. Options include: (1) providing partial replacement water supplies via stored water at Grizzly Ice Pond if the DFG can arrange such an agreement with the Grizzly Ice Pond water right holders; and/or (2) trucking in water; ▪ Grizzly Ranch Development Project. Temporarily accommodate the Grizzly Ranch Development Project for lost water supplies. Options include: (1) providing partial replacement water supplies via stored water at Grizzly Ice Pond if the DFG can arrange such an agreement with the Grizzly Ice Pond water right holders; and/or (2) covering the costs of pumping well water from existing wells on the Grizzly Ranch property.	
Human and Ecological Health Concerns, Environmental Concerns			
1. Toxicity effects to aquatic invertebrates	Impact HEH-2: Non-target aquatic invertebrate species may be impacted adversely by rotenone formulation toxicity with the use of either rotenone formulation proposed. The Proposed Project would have a less than significant impact on special status macroinvertebrate species in the reservoir, because none are known or suspected to occur in Lake Davis., The impacts of the Proposed Project on special status invertebrate species in the tributary streams and springs would be significant but mitigable. The amphibious caddisfly, D. bethula, is known to occur in Big Grizzly, Old House and Cow creeks and would be affected by the treatment.(see Table 7.1-2). Impacts to pelagic zooplankton communities would be less than significant because of their rapid recolonization. However, the time for littoral macroinvertebrate communities to fully re establish may exceed two years, based on past monitoring. This impact is adverse, significant and unavoidable. Collectively, eradication and/or suppression of some aquatic invertebrate populations in the Lake Davis project area from rotenone toxicity is likely, and is a significant and unavoidable adverse impact, since some species may take more than two years to re-establish to pre-treatment levels.	Mitigation HEH-2: For significant but mitigable impacts explained above, see mitigation measures AR-10a, AR-10b, AR-10c, AR-10d, AR-10e, and AR-10f in Section 7.1.2.4. These measures would reduce these adverse impacts to less than significant. No feasible options are available to effectively re-seed invertebrate communities in the reservoir. Avoiding trout restocking for a period while the zooplankton population recovers would speed the recovery of this community. However, it is not expected to benefit the littoral community, as trout would feed preferentially on zooplankton, which would recover much more quickly than the littoral community. There are no reasonably prudent measures to prevent the loss of individual macroinvertebrate and zooplankton species that may be impacted.	Significant and unavoidable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-2. Significant Impacts and Mitigation for Proposed Project[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
2. Toxicity effects on amphibians and reptiles	Impact HEH-3: Non-target amphibian and obligate aquatic reptile species may be impacted adversely by rotenone formulation toxicity associated with the treatment, with the use of either rotenone formulation proposed. Given the uncertainty associated with the current understanding of amphibian and reptile use of the project area, and the life history stages that could be in the reservoir and tributary streams and springs at the time of treatment, it is conservatively concluded that the adverse impact is significant but mitigable.	See mitigation for Impact TW-1	Less than Significant
3. Toxicity effects to humans from inhalation exposure	Impact HEH-9: Based on the conservative Screen3 air quality model, significant but mitigable adverse human health impacts may be experienced by some sectors of the public from the inhalation of rotenone formulation constituents volatilized into air after dilution in the reservoir.	Mitigation HEH-9: Use of the Noxfish® formulation would be balanced/combined with CFT Legumine® use that allows adequate rotenone concentrations in the water for the desired piscicide effect, but does not result in air concentrations for volatile solvent components above the health based screening levels (HBSLs) protective of human health.	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-3. Significant Impacts and Mitigation for Alternative A[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Water Resources: Geomorphology and Hydrology			
1. Tributary Incision	Impact H-2: During the dewatering and refill period, there is a potential for tributary head-cutting for at least three runoff seasons. The impact of tributary head-cutting is significant but mitigable.	See Table S-2, mitigation for Impact H-2	Less than Significant
Surface Water Quality			
1. Elevated turbidity due to erosion of lake sediments	Impact WQ-6: Elevated turbidity resulting from erosion caused by head-cutting of tributaries and incision of lake sediments and organic deposits is a significant and unavoidable adverse impact.	None available	Not applicable
2. Anoxic reservoir condition develops earlier in summer	Impact WQ-7: Anoxic reservoir condition develops earlier in the summer season than under No Project. The adverse impact is significant and unavoidable.	None available	Not applicable
3. Reduced flow in Big Grizzly Creek results in decreased dissolved oxygen and increased water temperature	Impact WQ-10: Reduced flows in Big Grizzly Creek during the treatment period (under the Proposed Neutralization Method and Options A and B) could result in decreased dissolved oxygen concentrations and increased water temperatures in Big Grizzly Creek. This adverse impact is significant and unavoidable.	None available	Not applicable
Noise			
1. Airboat Operation	Impact N-2: Operating airboats would increase local noise levels during chemical application. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-2	Less than significant
2. Neutralization Stations	Impact N-3: Generators/engines at neutralization below the dam would increase noise levels near sensitive receptors. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-3	Less than Significant
Aquatic Resources			
1. Lowering Lake Davis a. Littoral Community	Impact AR-3: The impacts of the Proposed Project would be considered significant and unavoidable on the littoral macroinvertebrate communities, but less than significant on the limnetic (zooplankton) communities. The timeframe required for the littoral invertebrate community to re-establish may exceed two years, based on monitoring following the 1997 treatment.	None available	Not applicable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-3. Significant Impacts and Mitigation for Alternative A[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
b. Loss of Individual Taxa	Impact AR-4: The Proposed Project may result in the loss of one or more species, as not all species may be observed in sampling within 2 years after treatment (DFG 2006d). There are no known mitigation measures to offset this impact. This impact would be significant and unavoidable.	None available	Not applicable
2. Treatment of Lake Davis a. Desirable Fish	Impact AR-5: The Proposed Project would have significant but mitigable impacts to desirable fish species.	See Table S-2, mitigation for Impact AR-5	Less than Significant
b. Littoral Community	Impact AR-7: The Proposed Project would have significant and unavoidable impacts to littoral invertebrate communities, as the time for these communities to fully re-establish may exceed two years and no effective mitigation measures are known. Impacts to zooplankton communities would be less than significant.	None available	Not applicable
c. Loss of Individual Taxa	Impact AR-8: The Proposed Project may result in the loss of one or more species, as not all species may be observed in sampling within two years after treatment (DFG 2006d). There are no known mitigation measures to offset this impact. This impact would be significant and unavoidable.	None available	Not applicable
3. Treatment of Tributary Streams a. Desirable Fish	Impact AR-9: The impacts of the Proposed Project on desirable fish species would be significant but mitigable, as the application of rotenone is anticipated to kill all trout and many other fish species in tributary streams.	See Table S-2, mitigation for Impact AR-5.	Less than Significant
b. Special Status Macroinvertebrates	Impact AR-10: The impacts of the Proposed Project on special status invertebrate species would be significant but mitigable. The amphibious caddisfly, *D. bethula*, is known to occur in Big Grizzly, Old House, and Cow creeks and would be affected by the treatment.	See Table S-2, mitigation for Impact AR-10	Less than Significant
c. Loss of Individual Taxa	Impact AR-12: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the extent of the treatment area and the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
4. Treatment of Springs and Other Waters a. Special Status Macroinvertebrates	Impact AR-14: The Proposed Project would have significant but mitigable impacts to the amphibious caddisfly, *D. bethula*, if springs in which it occurs are treated. The amphibious caddisfly is known to occur in	See Table S-2, mitigation for Impact A-10	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-3. Significant Impacts and Mitigation for Alternative A[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	two unnamed springs. This impact would also occur on other special status species that could potentially be present, including springsnails.		
b. Loss of Individual Taxa	Impact AR-16: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
5. Increased Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-17: Impacts from the Proposed Project would be significant but mitigable on desirable fish species. The young-of-year would be substantially reduced or lost. This impact would be substantially less than impacts resulting from dewatering the stream as described for Neutralization Option 1 (described below).	See Table S-2, mitigation for impact AR-17	Less than Significant
6. Reduced Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-23: The impacts from the Proposed Project would be significant but mitigable on desirable fish species.	See Table S-2, mitigation for Impact AR-1	Less than Significant
Wildlife Resources			
1. Exposure of terrestrial wildlife to rotenone through direct contact, ingestion of treated water, or consumption of fish killed by rotenone.	Impact TW-1: The application of rotenone to habitats potentially occupied by mountain yellow-legged frog, foothill yellow-legged frog, and northwestern pond turtle may result in mortality to individuals. The adverse impact is significant but mitigable.	See Table S-2, mitigation for TW-1	Less than Significant
2. Reduction of aquatic and wetland habitats used by terrestrial wildlife due to drawdown of Lake Davis.	Impact TW-2: The drawdown of Lake Davis could result in altered habitats used by various terrestrial wildlife species, including a reduction in the surface area of the reservoir used as foraging habitat by the bald eagle and osprey, and increased predation and reduced habitat for nesting and migrating Canada geese and other waterfowl. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-2	Less than Significant
	Impact TW-3: The drawdown of Lake Davis to the proposed water volume level could result in a land or shallow-water connection to the island in Lake Davis, that is used as a colonial nesting site by California gulls. The loss of the separation between the island and shore prior to completion of the gulls nesting period could allow predators access to the island when nesting gulls and their chicks are highly vulnerable. Refill of the reservoir to a level that would provide a water barrier around the island may occur prior to the first year post-treatment, or	See Table S-2, mitigation for Impact TW-3	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-3. Significant Impacts and Mitigation for Alternative A[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	it may take four or five years. The adverse impact is significant but mitigable.		
3. Impacts to fish-eating terrestrial wildlife due to temporary reduction of the fish community and treatment and/or dewatering of Lake Davis and tributaries.	Impact TW-4: The drawdown and/or treatment of Lake Davis with rotenone would result in a temporary loss of the primary food base for bald eagles and ospreys utilizing the reservoir and may contribute to nest failure for territories associated with Lake Davis. Initiating rotenone treatment prior to September 1 may constitute disturbance to nesting eagles due to the loss of the fishery prey base. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-4	Less than Significant
4. Impacts to insectivorous terrestrial wildlife due to temporary reduction of the aquatic invertebrate community through treatment and/or drawdown of Lake Davis.	Impact TW-5: The temporary loss of aquatic insects and their terrestrial forms may impact terrestrial species of insectivorous wildlife, including amphibians, reptiles, bats, and birds. The willow flycatcher is highly dependant on the aquatic-derived invertebrate prey base and suitable habitat is present in the project area. Activities related to the dewatering of streams and/or rotenone treatment may be initiated prior to September 1 and may overlap with the end of the willow flycatcher's nesting period. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-5	Less than Significant
5. Impacts to terrestrial wildlife due to disturbance associated with treatment and/or water drawdown activities at Lake Davis and its tributaries.	Impact TW-6: Activities associated with water drawdown and rotenone treatment of Lake Davis and its tributaries may cause disturbance to: bald eagles and great gray owls if these activities are initiated prior to September 1 in the vicinity of active nest-sites (e.g., Jenkins Cove area); to the goshawk if activities begin prior to September 15 within occupied PACs (e.g., Lightning Point vicinity); and to willow flycatchers prior to September 1 along tributary streams where suitable habitat is located. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-6a	Less than Significant
Botanical Resources			
1. Temporary loss of riparian vegetation	Impact VEG-2: The temporary loss of riparian vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-2	Less than Significant
2. Temporary loss of wetland vegetation	Impact VEG-3: The temporary loss of wetland vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-3	Less than Significant
3. Direct impacts to special status plant species	Impact VEG-4: Direct adverse impacts to special status plant species are significant but mitigable.	See Table S-2, mitigation for Impact VEG-4	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-3. Significant Impacts and Mitigation for Alternative A[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
4. Noxious weed colonization of ground disturbed by project-related actions	Impact VEG-5: Noxious weed colonization of ground disturbed by Project-related actions is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-5	Less than Significant
Land Use			
1. Exposed gap in fencing with Lake Davis drawdown	Impact LU-1: Containment of cattle in the Grizzly Valley allotment as reservoir drawdown falls below the current fence extending into Lake Davis. This adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact LU-1	Less than Significant
2. Coordination with Freeman Project	Impact LU-2: Overlap in project areas and traffic from the Proposed Project and Freeman Project is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact LU-2	Less than Significant
Aesthetics			
1. Amount of exposed lakebed observable	Impact A-6: A band of bare shoreline would be visible at foreground and middleground distances to recreationists and the general public for up to eight months during the year treatment would occur and for and additional 5 to 25 months during refill. The impact on aesthetics would be significant and unavoidable.	None available	Not applicable
Cultural Resources			
1. Ground Disturbance in Staging Areas	Impact CR-1: Proposed Project activities in staging areas, storage areas, and tributary access areas could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-1	Less than Significant
2. Ground disturbance from ramp extension	Impact CR-2: Extension of the boat ramp in order to allow boat access to Lake Davis as reservoir levels drop could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-2	Less than Significant
3. Erosion from lake drawdown	Impact CR-3: The dewatering of the reservoir could potentially cause erosion to potential cultural resource sites. The impact from erosion is significant but mitigable.	See Table S-2, mitigation for Impact CR-3	Less than Significant
Recreation			
1. Loss of Recreation Use at Lake Davis	Impact R-1: The direct adverse impact due to loss of recreation use at Lake Davis, including loss for up to two seasons, is significant but mitigable.	See Table S-2, mitigation for Impact R-1	Less than Significant
2. Crowding at Frenchman Lake	Impact R-2: Indirect adverse impact due to increased crowding and physical deterioration of recreation facilities at Frenchman Lake is significant but mitigable.	See Table S-2, mitigation for Impact R-2	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-3. Significant Impacts and Mitigation for Alternative A[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
3. Constraints on Big Grizzly Creek Recreation	Impact R-3: Under the Proposed Project there could be no days when the Grizzly Ice Pond is useable for recreation. This would be a significant adverse impact, but can be mitigated to less than significant.	See Table S-2, mitigation for Impact R-3	Less than Significant
Public Services			
1. Domestic Public Water Supplies	Impact PS-9: Alternative A would have a significant, but mitigable, adverse impact on domestic public water supplies. Please refer to table S-2, Impact PS-4.	See Table S-2, mitigation for Impact PS-4	Less than Significant
2. Downstream Water Supplies	Impact PS-10: Alternative A would have a significant, but mitigable, adverse impact on downstream water supplies and related uses. Please refer to table S-2, Impact PS-5.	See Table S-2, mitigation for Impact PS-5	Less than Significant
Human and Ecological Health Concerns, Environmental Concerns			
1. Toxicity effects to aquatic invertebrates	Impact HEH-2: Non-target aquatic invertebrate species may be impacted adversely by rotenone formulation toxicity with the use of either rotenone formulation proposed. The Proposed Project would have a less than significant impact on special status macroinvertebrate species, because none are known or suspected to occur in Lake Davis, although some may be found in the broader project area (see Table 7.1-2). Impacts to pelagic zooplankton communities would be less than significant because of their rapid recolonization. However, the time for littoral macroinvertebrate communities to fully re-establish may exceed two years, based on past monitoring. This impact is adverse, significant and unavoidable. Collectively, eradication and/or suppression of some aquatic invertebrate populations in the Lake Davis project area from rotenone toxicity is likely, and is a significant and unavoidable adverse impact.	See Table S-2, mitigation for Impact HEH-2	Significant and unavoidable
2. Toxicity effects on amphibians and reptiles	Impact HEH-3: Non-target amphibian and obligate aquatic reptile species may be impacted adversely by rotenone formulation toxicity associated with the treatment, with the use of either rotenone formulation proposed. Given the uncertainty associated with the current understanding of amphibian and reptile use of the project area, and the life history stages that could be in the reservoir and tributary streams and springs at the time of treatment, it is conservatively concluded that the adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-1	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-3. Significant Impacts and Mitigation for Alternative A[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
3. Effects of fugitive rotenone dust on wildlife	Impact HEH-13: Fugitive rotenone dust generated during slurry preparation and reservoir treatment represents an unestimable potential risk to non-aquatic wildlife that is considered significant, adverse, and mitigable.	Mitigation HEH-13: Rotenone solutions created from the powdered cube root would be mixed mechanically, with a cover overlying the stock solution to prevent significant concentrations of fugitive rotenone dust from liberating into the air prior to dispersal into the reservoir. Use of powdered rotenone would be avoided if wind conditions on projected day(s) for treatment present uncontrollable fugitive dust conditions. These wind conditions would be defined through consultation with the rotenone formulation manufacturer.	Less than significant.
4. Effects of fugitive rotenone dust on humans	Impact HEH-14: Adverse human health impacts may be experienced by sectors of the public from the inhalation of rotenone dust volatilized into air after dilution in the treated waters. The impact is considered significant and adverse, but mitigable.	See mitigation for Impact HEH-13	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-4. Significant Impacts and Mitigation for Alternative B[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Water Resources: Geomorphology and Hydrology			
1. Tributary Incision	Impact H-5: During the dewatering and refill period, there is a potential for tributary head-cutting for at least four runoff seasons. The impact on tributary head-cutting is significant but mitigable.	See Table S-2, mitigation for Impact H-2	Less than Significant
Surface Water Quality			
1. Elevated turbidity due to erosion of lake sediments	Impact WQ-12: Elevated turbidity resulting from erosion caused by head-cutting of tributaries and incision of reservoir sediments is a significant and unavoidable adverse impact.	None available	Not applicable
2. Anoxic reservoir condition develops earlier in summer	Impact WQ-13: Anoxic reservoir condition develops earlier in the summer season than under No Project. The adverse impact is significant and unavoidable.	None available	Significant and unavoidable
3. Reduced flow in Big Grizzly Creek results in decreased dissolved oxygen and increased water temperature	Impact WQ-16: Reduced flows in Big Grizzly Creek during the treatment period (under the Proposed Neutralization Method and Options A and B) could result in decreased dissolved oxygen concentrations and increased water temperatures in Big Grizzly Creek. This adverse impact is significant and unavoidable.	None available	Not applicable
Noise			
1. Airboat Operation	Impact N-2: Operating airboats would increase local noise levels during chemical application. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-2	Less than significant
2. Neutralization Stations	Impact N-3: Generators/engines at neutralization below the dam would increase noise levels near sensitive receptors. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-3	Less than Significant
Aquatic Resources			
1. Lowering Lake Davis a. Desirable Fish	Impact AR-35: Impacts from Alternative B on desirable fish species would be significant and unavoidable.	Mitigation AR-35: Restocking the reservoir following the recommendations in the Fisheries Management Plan, Appendix G, would restore the rainbow trout fishery following drawdown and treatment, but there is a 75 percent likelihood that it would take longer than two years for the reservoir to be refilled.	Significant and unavoidable
b. Littoral Community	Impact AR-37: Impacts from Alternative B would be considered significant and unavoidable to macroinvertebrate communities. The timeframe required for the littoral invertebrate community to re-establish will likely exceed two years, based on known hydrology. Additionally, macroinvertebrate communities	None available	Not applicable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-4. Significant Impacts and Mitigation for Alternative B[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	are expected to take longer than two years to re-establish. No feasible options are available to effectively reseed invertebrate communities over such a large area.		
c. Loss of Individual Taxa	Impact AR-4: The Proposed Project may result in the loss of one or more species, as not all species may be observed in sampling within 2 years after treatment (DFG 2006d). There are no known mitigation measures to offset this impact. This impact would be significant and unavoidable.	None available	Not applicable
2. Treatment of Lake Davis a. Desirable Fish	Impact AR-5: The Proposed Project would have significant but mitigable impacts to desirable fish species.	See Table S-2, mitigation for Impact AR-5	Less than Significant
b. Littoral Community	Impact AR-7: The Proposed Project would have significant and unavoidable impacts to littoral invertebrate communities, as the time for these communities to fully re-establish may exceed two years and no effective mitigation measures are known. Impacts to zooplankton communities would be less than significant.	None available	Not applicable
c. Loss of Individual Taxa	Impact AR-8: The Proposed Project may result in the loss of one or more species, as not all species may be observed in sampling within two years after treatment (DFG 2006d). There are no known mitigation measures to offset this impact. This impact would be significant and unavoidable.	None available	Not applicable
3. Treatment of Tributary Streams a. Desirable Fish	Impact AR-9: The impacts of the Proposed Project on desirable fish species would be significant but mitigable, as the application of rotenone is anticipated to kill all trout and many other fish species in tributary streams.	See Table S-2, mitigation for Impact AR-5.	Less than Significant
b. Special Status Macroinvertebrates	Impact AR-10: The impacts of the Proposed Project on special status invertebrate species would be significant but mitigable. The amphibious caddisfly, *D. bethula*, is known to occur in Big Grizzly, Old House, and Cow creeks and would be affected by the treatment.	See Table S-2, mitigation for Impact AR-10	Less than Significant
c. Loss of Individual Taxa	Impact AR-12: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the extent of the treatment area and the patchy geographic and temporal distribution of	None available	Not applicable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-4. Significant Impacts and Mitigation for Alternative B[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	macroinvertebrates, mitigation of this potential impact is infeasible.		
4. Treatment of Springs and Other Waters a. Special Status Macroinvertebrates	Impact AR-14: The Proposed Project would have significant but mitigable impacts to the amphibious caddisfly, *D. bethula*, if springs in which it occurs are treated. The amphibious caddisfly is known to occur in two unnamed springs. This impact would also occur on other special status species that could potentially be present, including springsnails.	See Table S-2, mitigation for Impact A-10	Less than Significant
b. Loss of Individual Taxa	Impact AR-16: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
5. Increased Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-17: Impacts from the Proposed Project would be significant but mitigable on desirable fish species. The young-of-year would be substantially reduced or lost. This impact would be substantially less than impacts resulting from dewatering the stream as described for Neutralization Option 1 (described below).	See Table S-2, mitigation for impact AR-17	Less than Significant
6. Reduced Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-23: The impacts from the Proposed Project would be significant but mitigable on desirable fish species.	See Table S-2, mitigation for Impact AR-1	Less than Significant
Wildlife Resources			
1. Exposure of terrestrial wildlife to rotenone through direct contact, ingestion of treated water, or consumption of fish killed by rotenone.	Impact TW-1: The application of rotenone to habitats potentially occupied by mountain yellow-legged frog, foothill yellow-legged frog, and northwestern pond turtle may result in mortality to individuals. The adverse impact is significant but mitigable.	See Table S-2, mitigation for TW-1	Less than Significant
2. Reduction of aquatic and wetland habitats used by terrestrial wildlife due to drawdown of Lake Davis.	Impact TW-7: The drawdown of Lake Davis could result in altering habitats used by various terrestrial wildlife species, including a reduction in the surface area of the reservoir used as foraging habitat by the bald eagle and osprey, and increased predation and reduced habitat for nesting and migrating Canada geese and other waterfowl. The adverse impact is significant and mitigable.	Mitigation TW-7: A bald eagle supplemental feeding program will be implemented beginning the year of treatment when the reservoir is drawn down below a volume of 15,000 acre-feet (surface area of 1,331 acres; surface elevation of 5,749 feet) and would continue through August 31 or as long as there is an active eagle nest at Lake Davis. In the year following rotenone treatment, food will be made available to the eagles beginning at ice-out and extending at least until August 31. Dead fish (rotenone-killed fish may be used) will be provided to eagles at two sites within or adjacent to each active nesting territory. Several dead fish are to be placed early each morning on the ground near the shoreline or on an anchored raft floated on the water in view of a suitable eagle perch in the area where	Less than significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-4. Significant Impacts and Mitigation for Alternative B[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		nesting or fledgling eagles have been active. Food will be provided every five out of seven days while skipping no more than one day in succession. The supplemental feeding program will continue the second (and subsequent) year(s) following treatment until reservoir levels are within 90 percent of the pre-drawdown surface area (2,554 surface acres; 37,936 acre-feet volume; 5,761 feet surface elevation) if there are two active eagle nests at the reservoir, or until 75 percent of pre-draw-down surface area (2,129 surface acres; 28,355 acre-feet volume; 5,757 feet elevation) is reached if one active eagle nest is present.	
	Impact TW-8: The drawdown of Lake Davis to the proposed water volume could result in providing a land or shallow-water connection to the island in Lake Davis that is used as a colonial nesting site by California gulls. The loss of the separation between the island and shore prior to completion of the gulls nesting period could allow predators access to the island when nesting gulls and their chicks are highly vulnerable. Refill of the reservoir to a level that would provide a water barrier around the island may occur prior to the first year post-treatment, or it may take four or five years. The adverse impact is significant and unavoidable.	None available	Not applicable
3. Impacts to fish-eating terrestrial wildlife due to temporary reduction of the fish community and treatment and/or dewatering of Lake Davis and tributaries.	Impact TW-4: The drawdown and/or treatment of Lake Davis with rotenone would result in a temporary loss of the primary food base for bald eagles and ospreys utilizing the reservoir and may contribute to nest failure for territories associated with Lake Davis. Initiating rotenone treatment prior to September 1 may constitute disturbance to nesting eagles due to the loss of the fishery prey base. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-4	Less than Significant
4. Impacts to insectivorous terrestrial wildlife due to temporary reduction of the aquatic invertebrate community through treatment and/or drawdown of Lake Davis.	Impact TW-5: The temporary loss of aquatic insects and their terrestrial forms may impact terrestrial species of insectivorous wildlife, including amphibians, reptiles, bats, and birds. The willow flycatcher is highly dependant on the aquatic-derived invertebrate prey base and suitable habitat is present in the project area. Activities related to the dewatering of streams and/or rotenone treatment may be initiated prior to September 1 and may overlap with the end of the willow flycatcher's nesting period. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-5	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-4. Significant Impacts and Mitigation for Alternative B[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
5. Impacts to terrestrial wildlife due to disturbance associated with treatment and/or water drawdown activities at Lake Davis and its tributaries.	Impact TW-6: Activities associated with water drawdown and rotenone treatment of Lake Davis and its tributaries may cause disturbance to: bald eagles and great gray owls if these activities are initiated prior to September 1 in the vicinity of active nest-sites (e.g., Jenkins Cove area); to the goshawk if activities begin prior to September 15 within occupied PACs (e.g., Lightning Point vicinity); and to willow flycatchers prior to September 1 along tributary streams where suitable habitat is located. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-6a	Less than Significant
Botanical Resources			
1. Temporary loss of riparian vegetation	Impact VEG-2: The temporary loss of riparian vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-2	Less than Significant
2. Temporary loss of wetland vegetation	Impact VEG-3: The temporary loss of wetland vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-3	Less than Significant
3. Direct impacts to special status plant species	Impact VEG-4: Direct adverse impacts to special status plant species are significant but mitigable.	See Table S-2, mitigation for Impact VEG-4	Less than Significant
4. Noxious weed colonization of ground disturbed by project-related actions	Impact VEG-5: Noxious weed colonization of ground disturbed by Project-related actions is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-5	Less than Significant
Land Use			
1. Exposed gap in fencing with Lake Davis drawdown	Impact LU-1: Containment of cattle in the Grizzly Valley allotment as reservoir drawdown falls below the current fence extending into Lake Davis. This adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact LU-1	Less than Significant
2. Coordination with Freeman Project	Impact LU-2: Overlap in project areas and traffic from the Proposed Project and Freeman Project is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact LU-2	Less than Significant
Aesthetics			
1. Amount of exposed lakebed observable	Impact A-7: A band of bare shoreline would be visible to recreationists and the general public for eight months during the year treatment would occur and for up to an additional 38 months under the slower scenario for refill. The impact on aesthetics would be significant and unavoidable.	None available	Not applicable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-4. Significant Impacts and Mitigation for Alternative B[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Cultural Resources			
2. Ground Disturbance in Staging Areas	Impact CR-1: Proposed Project activities in staging areas, storage areas, and tributary access areas could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-1	Less than Significant
3. Ground disturbance from ramp extension	Impact CR-2: Extension of the boat ramp in order to allow boat access to Lake Davis as reservoir levels drop could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-2	Less than Significant
4. Erosion from lake drawdown	Impact CR-3: The dewatering of the reservoir could potentially cause erosion to potential cultural resource sites. The impact from erosion is significant but mitigable.	See Table S-2, mitigation for Impact CR-3	Less than Significant
Recreation			
1. Loss of Recreation Use at Lake Davis	Impact R-4: Direct adverse impact due to loss of recreation use at Lake Davis, including loss for up to three seasons, is significant but mitigable.	Mitigation R-4: Mitigation R-1 shall be implemented to promote recreation use at Lake Davis. In addition, the DFG shall contribute to the PNF $10,000 for a feasibility study for design and construction of an amphitheater that would be used for interpretive programs.	Less than Significant
2. Crowding at Frenchman Lake	Impact R-5: Indirect adverse impact due to increased crowding and physical deterioration of recreation facilities at Frenchman Lake is significant but mitigable.	See Table S-2, mitigation for Impact R-2	Less than Significant
3. Constraints on Big Grizzly Creek Recreation	Impact R-3: Under the Proposed Project there could be no days when the Grizzly Ice Pond is useable for recreation. This would be a significant adverse impact, but can be mitigated to less than significant.	See Table S-2, mitigation for Impact R-3	Less than Significant
Public Services			
1. Domestic Public Water Supplies	Impact PS-14: There is the potential for Alternative B to delay use of Lake Davis as a domestic water supply source for the City of Portola and GRLID by delaying water deliveries to the new water treatment plant, depending on when the water treatment plant is constructed and approved for use. This could result in both entities having to remain on their community groundwater systems for a longer period of time than they would without Alternative B. Based on the capacity of these systems, there may not be sufficient water supplies in the City of Portola and the GLRID service	See Table S-2, mitigation for Impact PS-4	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-4. Significant Impacts and Mitigation for Alternative B[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	area to meet water demands during an 11-month period corresponding to project implementation (treatment and refill to 5,750 feet). Further, the City of Portola could have to continue use of its community groundwater system, which currently exceeds Federal standards for arsenic. These temporary adverse impacts are significant, but mitigable.		
2. Downstream Water Supplies	Impact PS-15: On a temporary basis, downstream water uses could potentially be adversely affected during treatment and neutralization period as a result of reduced water flows from Grizzly Valley Dam under Alternative B. This represents a significant, but mitigable, adverse water supply impact.	See Table S-2, mitigation for Impact PS-5	Less than Significant
Human and Ecological Health Concerns, Environmental Concerns			
1. Toxicity effects to aquatic invertebrates	Impact HEH-2: Non-target aquatic invertebrate species may be impacted adversely by rotenone formulation toxicity with the use of either rotenone formulation proposed. The Proposed Project would have a less than significant impact on special status macroinvertebrate species, because none are known or suspected to occur in Lake Davis, although some may be found in the broader project area (see Table 7.1-2). Impacts to pelagic zooplankton communities would be less than significant because of their rapid recolonization. However, the time for littoral macroinvertebrate communities to fully re-establish may exceed two years, based on past monitoring. This impact is adverse, significant and unavoidable. Collectively, eradication and/or suppression of some aquatic invertebrate populations in the Lake Davis project area from rotenone toxicity is likely, and is a significant and unavoidable adverse impact.	See Table S-2, mitigation for Impact HEH-2	Significant and unavoidable
2. Toxicity effects on amphibians and reptiles	Impact HEH-3: Non-target amphibian and obligate aquatic reptile species may be impacted adversely by rotenone formulation toxicity associated with the treatment, with the use of either rotenone formulation proposed. Given the uncertainty associated with the current understanding of amphibian and reptile use of the project area, and the life history stages that could be in the reservoir and tributary streams and springs at the	See Table S-2, mitigation for Impact TW-1	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-4. Significant Impacts and Mitigation for Alternative B[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	time of treatment, it is conservatively concluded that the adverse impact is significant but mitigable.		
3. Toxicity effects to humans from inhalation exposure	Impact HEH-9: Based on the conservative Screen3 air quality model, significant but mitigable adverse human health impacts may be experienced by some sectors of the public from the inhalation of rotenone formulation constituents volatilized into air after dilution in the reservoir.	See Table S-2, mitigation for Impact HEH-9	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-5. Significant Impacts and Mitigation for Alternative C[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Water Resources: Geomorphology and Hydrology			
1. Tributary Incision	Impact H-14: During the dewatering and refill period, there is a potential for tributary head-cutting for at least four runoff seasons. The impact on tributary head-cutting is significant but mitigable.	See Table S-2, mitigation for Impact H-2	Less than Significant
Surface Water Quality			
1. Elevated turbidity due to erosion of lake sediments	Impact WQ-17: Elevated turbidity resulting from erosion caused by head-cutting of tributaries and incision of reservoir sediments is a significant and unavoidable adverse impact.	None available	Not applicable
2. Anoxic reservoir condition develops earlier in summer	Impact WQ-18: Anoxic reservoir condition develops earlier in the summer season than under No Project. This adverse impact is significant and unavoidable.	None available	Not applicable
3. Reduced flow in Big Grizzly Creek results in decreased dissolved oxygen and increased water temperature	Impact WQ-21: Reduced flows in Big Grizzly Creek during the treatment period (under the Proposed Neutralization Method and Options A and B) could result in decreased dissolved oxygen concentrations and increased water temperatures in Big Grizzly Creek. This adverse impact is significant and unavoidable.	None available	Not applicable
Noise			
1. Airboat Operation	Impact N-2: Operating airboats would increase local noise levels during chemical application. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-2	Less than significant
2. Neutralization Stations	Impact N-3: Generators/engines at neutralization below the dam would increase noise levels near sensitive receptors. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-3	Less than Significant
Aquatic Resources			
1. Treatment of Lake Davis a. Desirable Fish	Impact AR-5: The Proposed Project would have significant but mitigable impacts to desirable fish species.	See Table S-2, mitigation for Impact AR-5	Less than Significant
b. Littoral Community	Impact AR-7: The Proposed Project would have significant and unavoidable impacts to littoral invertebrate communities, as the time for these communities to fully re-establish may exceed two years and no effective mitigation measures are known. Impacts to zooplankton communities would be less than significant.	None available	Not applicable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-5. Significant Impacts and Mitigation for Alternative C[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
c. Loss of Individual Taxa	Impact AR-8: The Proposed Project may result in the loss of one or more species, as not all species may be observed in sampling within two years after treatment (DFG 2006d). There are no known mitigation measures to offset this impact. This impact would be significant and unavoidable.	None available	Not applicable
2. Treatment of Tributary Streams a. Desirable Fish	Impact AR-9: The impacts of the Proposed Project on desirable fish species would be significant but mitigable, as the application of rotenone is anticipated to kill all trout and many other fish species in tributary streams.	See Table S-2, mitigation for Impact AR-5.	Less than Significant
b. Special Status Macroinvertebrates	Impact AR-10: The impacts of the Proposed Project on special status invertebrate species would be significant but mitigable. The amphibious caddisfly, *D. bethula*, is known to occur in Big Grizzly, Old House, and Cow creeks and would be affected by the treatment.	See Table S-2, mitigation for Impact AR-10	Less than Significant
c. Loss of Individual Taxa	Impact AR-12: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the extent of the treatment area and the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
3. Treatment of Springs and Other Waters a. Special Status Macroinvertebrates	Impact AR-14: The Proposed Project would have significant but mitigable impacts to the amphibious caddisfly, *D. bethula*, if springs in which it occurs are treated. The amphibious caddisfly is known to occur in two unnamed springs. This impact would also occur on other special status species that could potentially be present, including springsnails.	See Table S-2, mitigation for Impact A-10	Less than Significant
b. Loss of Individual Taxa	Impact AR-16: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
4. Increased Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-17: Impacts from the Proposed Project would be significant but mitigable on desirable fish species. The young-of-year would be substantially reduced or lost. This impact would be substantially less than impacts resulting from dewatering the stream as described for Neutralization Option 1 (described below).	See Table S-2, mitigation for impact AR-17	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-5. Significant Impacts and Mitigation for Alternative C[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
5. Reduced Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-23: The impacts from the Proposed Project would be significant but mitigable on desirable fish species.	See Table S-2, mitigation for Impact AR-1	Less than Significant
Wildlife Resources			
1. Exposure of terrestrial wildlife to rotenone through direct contact, ingestion of treated water, or consumption of fish killed by rotenone.	Impact TW-1: The application of rotenone to habitats potentially occupied by mountain yellow-legged frog, foothill yellow-legged frog, and northwestern pond turtle may result in mortality to individuals. The adverse impact is significant but mitigable.	See Table S-2, mitigation for TW-1	Less than Significant
2. Reduction of aquatic and wetland habitats used by terrestrial wildlife due to drawdown of Lake Davis.	Impact TW-2: The drawdown of Lake Davis could result in altered habitats used by various terrestrial wildlife species, including a reduction in the surface area of the reservoir used as foraging habitat by the bald eagle and osprey, and increased predation and reduced habitat for nesting and migrating Canada geese and other waterfowl. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-2	Less than Significant
	Impact TW-3: The drawdown of Lake Davis to the proposed water volume level could result in a land or shallow-water connection to the island in Lake Davis, that is used as a colonial nesting site by California gulls. The loss of the separation between the island and shore prior to completion of the gulls nesting period could allow predators access to the island when nesting gulls and their chicks are highly vulnerable. Refill of the reservoir to a level that would provide a water barrier around the island may occur prior to the first year post-treatment, or it may take four or five years. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-3	Less than Significant
3. Impacts to fish-eating terrestrial wildlife due to temporary reduction of the fish community and treatment and/or dewatering of Lake Davis and tributaries.	Impact TW-4: The drawdown and/or treatment of Lake Davis with rotenone would result in a temporary loss of the primary food base for bald eagles and ospreys utilizing the reservoir and may contribute to nest failure for territories associated with Lake Davis. Initiating rotenone treatment prior to September 1 may constitute disturbance to nesting eagles due to the loss of the fishery prey base. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-4	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-5. Significant Impacts and Mitigation for Alternative C[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
4. Impacts to insectivorous terrestrial wildlife due to temporary reduction of the aquatic invertebrate community through treatment and/or drawdown of Lake Davis.	Impact TW-5: The temporary loss of aquatic insects and their terrestrial forms may impact terrestrial species of insectivorous wildlife, including amphibians, reptiles, bats, and birds. The willow flycatcher is highly dependant on the aquatic-derived invertebrate prey base and suitable habitat is present in the project area. Activities related to the dewatering of streams and/or rotenone treatment may be initiated prior to September 1 and may overlap with the end of the willow flycatcher's nesting period. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-5	Less than Significant
5. Impacts to terrestrial wildlife due to disturbance associated with treatment and/or water drawdown activities at Lake Davis and its tributaries.	Impact TW-6: Activities associated with water drawdown and rotenone treatment of Lake Davis and its tributaries may cause disturbance to: bald eagles and great gray owls if these activities are initiated prior to September 1 in the vicinity of active nest-sites (e.g., Jenkins Cove area); to the goshawk if activities begin prior to September 15 within occupied PACs (e.g., Lightning Point vicinity); and to willow flycatchers prior to September 1 along tributary streams where suitable habitat is located. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-6a	Less than Significant
Botanical Resources			
1. Temporary loss of riparian vegetation	Impact VEG-2: The temporary loss of riparian vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-2	Less than Significant
2. Temporary loss of wetland vegetation	Impact VEG-3: The temporary loss of wetland vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-3	Less than Significant
3. Direct impacts to special status plant species	Impact VEG-4: Direct adverse impacts to special status plant species are significant but mitigable.	See Table S-2, mitigation for Impact VEG-4	Less than Significant
4. Noxious weed colonization of ground disturbed by project-related actions	Impact VEG-5: Noxious weed colonization of ground disturbed by Project-related actions is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-5	Less than Significant
Land Use			
1. Exposed gap in fencing with Lake Davis drawdown	Impact LU-1: Containment of cattle in the Grizzly Valley allotment as reservoir drawdown falls below the current fence extending into Lake Davis. This adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact LU-1	Less than Significant
2. Coordination with Freeman Project	Impact LU-2: Overlap in project areas and traffic from the Proposed Project and Freeman Project is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact LU-2	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-5. Significant Impacts and Mitigation for Alternative C[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Aesthetic Resources			
1. Amount of exposed reservoir bed observable	Impact A-8: A band of bare shoreline would be visible to recreationists and the general public for up to eight months during the year treatment would occur and for an additional 13 to 24 months during refill. The impact on aesthetics would be significant and unavoidable.	There is no feasible mitigation	Significant and unavoidable
2. Appearance of Big Grizzly Creek due to neutralization activities	Impact A-8: A band of bare shoreline would be visible to recreationists and the general public for up to eight months during the year treatment would occur and for an additional 13 to 24 months during refill. The impact on aesthetics would be significant and unavoidable.	There is no feasible mitigation	Less than Significant
Cultural Resources			
1. Ground Disturbance in Staging Areas	Impact CR-1: Proposed Project activities in staging areas, storage areas, and tributary access areas could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-1	Less than Significant
2. Ground disturbance from ramp extension	Impact CR-2: Extension of the boat ramp in order to allow boat access to Lake Davis as reservoir levels drop could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-2	Less than Significant
3. Erosion from lake drawdown	Impact CR-3: The dewatering of the reservoir could potentially cause erosion to potential cultural resource sites. The impact from erosion is significant but mitigable.	See Table S-2, mitigation for Impact CR-3	Less than Significant
Recreation			
1. Loss of Recreation Use at Lake Davis	Impact R-6: Direct adverse impact due to loss of recreation use at Lake Davis, including loss for up to two seasons, is significant but mitigable.	See Table S-2, mitigation for Impact R-1	Less than Significant
2. Crowding at Frenchman Lake	Impact R-7: Indirect adverse impact due to increased crowding and physical deterioration of recreation facilities at Frenchman Lake would be significant but mitigable.	See Table S-2, mitigation for Impact R-2	Less than Significant
3. Constraints on Big Grizzly Creek Recreation	Impact R-3: Under the Proposed Project there could be no days when the Grizzly Ice Pond is useable for recreation. This would be a significant adverse impact, but can be mitigated to less than significant.	See Table S-2, mitigation for Impact R-3	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-5. Significant Impacts and Mitigation for Alternative C[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Public Services			
1. Domestic Public Water Supplies	Impact PS-19: There is the potential for this Alternative C to delay future use of Lake Davis as a domestic water supply source for the City of Portola and GRLID by delaying water deliveries to the new water treatment plant. This could result in both entities having to remain on their community groundwater systems for a longer period of time than they would without Alternative C. Based on the capacity of these systems, there may not be sufficient water supplies in the City of Portola and the GLRID service area to meet the demand during the 45-day treatment and neutralization period. Further, the City of Portola could have to continue use of its community groundwater system, which currently exceeds Federal standards for arsenic. These temporary adverse impacts are significant, but mitigable.	See Table S-2, mitigation for Impact PS-4	Less than Significant
2. Downstream Water Supplies	Impact PS-20: On a temporary basis, downstream water users would potentially be adversely affected during treatment and neutralization period under Alternative C as a result of reduced water flows from Grizzly Valley Dam. This represents a significant, but mitigable, adverse water supply impact.	See Table S-2, mitigation for Impact PS-5	Less than Significant
Human and Ecological Health Concerns, Environmental Concerns			
1. Toxicity effects to aquatic invertebrates	Impact HEH-2: Non-target aquatic invertebrate species may be impacted adversely by rotenone formulation toxicity with the use of either rotenone formulation proposed. The Proposed Project would have a less than significant impact on special status macroinvertebrate species, because none are known or suspected to occur in Lake Davis, although some may be found in the broader project area (see Table 7.1-2). Impacts to pelagic zooplankton communities would be less than significant because of their rapid recolonization. However, the time for littoral macroinvertebrate communities to fully re-establish may exceed two years, based on past monitoring. This impact is adverse, significant and unavoidable. Collectively, eradication and/or suppression of some aquatic invertebrate populations in the Lake Davis project area from rotenone toxicity is likely, and is a significant and	See Table S-2, mitigation for Impact HEH-2	Significant and unavoidable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-5. Significant Impacts and Mitigation for Alternative C[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	unavoidable adverse impact.		
2. Toxicity effects on amphibians and reptiles	Impact HEH-3: Non-target amphibian and obligate aquatic reptile species may be impacted adversely by rotenone formulation toxicity associated with the treatment, with the use of either rotenone formulation proposed. Given the uncertainty associated with the current understanding of amphibian and reptile use of the project area, and the life history stages that could be in the reservoir and tributary streams and springs at the time of treatment, it is conservatively concluded that the adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-1	Less than Significant
3. Toxicity effects to humans from inhalation exposure	Impact HEH-9: Based on the conservative Screen3 air quality model, significant but mitigable adverse human health impacts may be experienced by some sectors of the public from the inhalation of rotenone formulation constituents volatilized into air after dilution in the reservoir.	See Table S-2, mitigation for Impact HEH-9	Less than Significant
4. Impacts to humans from odors	Impact HEH-10a: Adverse Impacts from odor are considered significant but mitigable.	See Table S-2, mitigation for Impact HEH-9	Less than significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-6. Significant Impacts and Mitigation for Alternative D[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Surface Water Quality			
1. Reduced flow in Big Grizzly Creek results in decreased dissolved oxygen and increased water temperature	Impact WQ-26: Reduced flows in Big Grizzly Creek during the treatment period (under the Proposed Neutralization Method and Options A and B) could result in decreased dissolved oxygen concentrations and increased water temperatures in Big Grizzly Creek. This adverse impact is significant and unavoidable.	None available	Not applicable
Noise			
1. Airboat Operation	Impact N-2: Operating airboats would increase local noise levels during chemical application. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-2	Less than significant
2. Neutralization Stations	Impact N-3: Generators/engines at neutralization below the dam would increase noise levels near sensitive receptors. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-3	Less than Significant
Aquatic Resources			
1. Treatment of Lake Davis a. Desirable Fish	Impact AR-5: The Proposed Project would have significant but mitigable impacts to desirable fish species.	See Table S-2, mitigation for Impact AR-5	Less than Significant
b. Littoral Community	Impact AR-7: The Proposed Project would have significant and unavoidable impacts to littoral invertebrate communities, as the time for these communities to fully re-establish may exceed two years and no effective mitigation measures are known. Impacts to zooplankton communities would be less than significant.	None available	Not applicable
c. Loss of Individual Taxa	Impact AR-8: The Proposed Project may result in the loss of one or more species, as not all species may be observed in sampling within two years after treatment (DFG 2006d). There are no known mitigation measures to offset this impact. This impact would be significant and unavoidable.	None available	Not applicable
2. Treatment of Tributary Streams a. Desirable Fish	Impact AR-9: The impacts of the Proposed Project on desirable fish species would be significant but mitigable, as the application of rotenone is anticipated to kill all trout and many other fish species in tributary streams.	See Table S-2, mitigation for Impact AR-5.	Less than Significant
b. Special Status Macroinvertebrates	Impact AR-10: The impacts of the Proposed Project on special status invertebrate species would be significant but mitigable. The amphibious caddisfly, *D. bethula*, is known to occur in Big Grizzly, Old House, and Cow creeks and would be affected by the treatment.	See Table S-2, mitigation for Impact AR-10	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-6. Significant Impacts and Mitigation for Alternative D[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
c. Loss of Individual Taxa	Impact AR-12: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the extent of the treatment area and the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
3. Treatment of Springs and Other Waters a. Special Status Macroinvertebrates	Impact AR-14: The Proposed Project would have significant but mitigable impacts to the amphibious caddisfly, *D. bethula*, if springs in which it occurs are treated. The amphibious caddisfly is known to occur in two unnamed springs. This impact would also occur on other special status species that could potentially be present, including springsnails.	See Table S-2, mitigation for Impact A-10	Less than Significant
b. Loss of Individual Taxa	Impact AR-16: The proposed treatment may result in the loss of individual taxa for more than two years, and therefore would be significant and unavoidable. Because of the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
4. Reduced Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-23: The impacts from the Proposed Project would be significant but mitigable on desirable fish species.	See Table S-2, mitigation for Impact AR-1	Less than Significant
Wildlife Resources			
1. Exposure of terrestrial wildlife to rotenone through direct contact, ingestion of treated water, or consumption of fish killed by rotenone.	Impact TW-1: The application of rotenone to habitats potentially occupied by mountain yellow-legged frog, foothill yellow-legged frog, and northwestern pond turtle may result in mortality to individuals. The adverse impact is significant but mitigable.	See Table S-2, mitigation for TW-1	Less than Significant
2. Impacts to fish-eating terrestrial wildlife due to temporary reduction of the fish community and treatment and/or dewatering of Lake Davis and tributaries.	Impact TW-4: The drawdown and/or treatment of Lake Davis with rotenone would result in a temporary loss of the primary food base for bald eagles and ospreys utilizing the reservoir and may contribute to nest failure for territories associated with Lake Davis. Initiating rotenone treatment prior to September 1 may constitute disturbance to nesting eagles due to the loss of the fishery prey base. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-4	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-6. Significant Impacts and Mitigation for Alternative D[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
3. Impacts to insectivorous terrestrial wildlife due to temporary reduction of the aquatic invertebrate community through treatment and/or drawdown of Lake Davis.	Impact TW-5: The temporary loss of aquatic insects and their terrestrial forms may impact terrestrial species of insectivorous wildlife, including amphibians, reptiles, bats, and birds. The willow flycatcher is highly dependant on the aquatic-derived invertebrate prey base and suitable habitat is present in the project area. Activities related to the dewatering of streams and/or rotenone treatment may be initiated prior to September 1 and may overlap with the end of the willow flycatcher's nesting period. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-5	Less than Significant
4. Impacts to terrestrial wildlife due to disturbance associated with treatment and/or water drawdown activities at Lake Davis and its tributaries.	Impact TW-6: Activities associated with water drawdown and rotenone treatment of Lake Davis and its tributaries may cause disturbance to: bald eagles and great gray owls if these activities are initiated prior to September 1 in the vicinity of active nest-sites (e.g., Jenkins Cove area); to the goshawk if activities begin prior to September 15 within occupied PACs (e.g., Lightning Point vicinity); and to willow flycatchers prior to September 1 along tributary streams where suitable habitat is located. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-6a	Less than Significant
Botanical Resources			
1. Temporary loss of riparian vegetation	Impact VEG-2: The temporary loss of riparian vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-2	Less than Significant
2. Temporary loss of wetland vegetation	Impact VEG-3: The temporary loss of wetland vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-3	Less than Significant
3. Direct impacts to special status plant species	Impact VEG-4: Direct adverse impacts to special status plant species are significant but mitigable.	See Table S-2, mitigation for Impact VEG-4	Less than Significant
4. Noxious weed colonization of ground disturbed by project-related actions	Impact VEG-5: Noxious weed colonization of ground disturbed by Project-related actions is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-5	Less than Significant
Land Use			
1. Coordination with Freeman Project	Impact LU-2: Overlap in project areas and traffic from the Proposed Project and Freeman Project is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact LU-2	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-6. Significant Impacts and Mitigation for Alternative D[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Cultural Resources			
1. Ground Disturbance in Staging Areas	Impact CR-1: Proposed Project activities in staging areas, storage areas, and tributary access areas could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-1	Less than Significant
Public Services			
1. Domestic Public Water Supplies	Impact PS-24: There is the potential for Alternative D to delay future use of Lake Davis as a domestic water supply source for the City of Portola and GRLID by delaying deliveries of water t the new water treatment plant. This could result in both entities having to remain on their community groundwater systems for a longer period of time than they would without Alternative D. Based on the capacity of these systems, there may not be sufficient water supplies in the City of Portola and the GLRID service area to meet the demand during this 45-day treatment and neutralization period. Further, the City of Portola could have to continue use of its community groundwater system, which currently exceeds Federal standards for arsenic. These temporary adverse impacts are significant, but mitigable.	See Table S-2, mitigation for Impact PS-4	Less than Significant
2. Downstream Water Supplies	Impact PS-25: On a temporary basis, downstream water users would potentially be affected during treatment and neutralization period under Alternative D as a result of reduced water flows from Grizzly Valley Dam. This represents a significant, but mitigable, adverse water supply impact.	See Table S-2, mitigation for Impact PS-5	Less than Significant
Human and Ecological Health Concerns, Environmental Concerns			
1. Toxicity effects to aquatic invertebrates	Impact HEH-2: Non-target aquatic invertebrate species may be impacted adversely by rotenone formulation toxicity with the use of either rotenone formulation proposed. The Proposed Project would have a less than significant impact on special status macroinvertebrate species, because none are known or suspected to occur in Lake Davis, although some may be found in the broader project area (see Table 7.1-2). Impacts to pelagic zooplankton communities would be less than significant because of their rapid recolonization. However, the time for littoral macroinvertebrate	See Table S-2, mitigation for Impact HEH-2	Significant and unavoidable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-6. Significant Impacts and Mitigation for Alternative D[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	communities to fully re-establish may exceed two years, based on past monitoring. This impact is adverse, significant and unavoidable. Collectively, eradication and/or suppression of some aquatic invertebrate populations in the Lake Davis project area from rotenone toxicity is likely, and is a significant and unavoidable adverse impact.		
2. Toxicity effects on amphibians and reptiles	Impact HEH-3: Non-target amphibian and obligate aquatic reptile species may be impacted adversely by rotenone formulation toxicity associated with the treatment, with the use of either rotenone formulation proposed. Given the uncertainty associated with the current understanding of amphibian and reptile use of the project area, and the life history stages that could be in the reservoir and tributary streams and springs at the time of treatment, it is conservatively concluded that the adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-1	Less than Significant
3. Toxicity effects to humans from inhalation exposure	Impact HEH-9: Based on the conservative Screen3 air quality model, significant but mitigable adverse human health impacts may be experienced by some sectors of the public from the inhalation of rotenone formulation constituents volatilized into air after dilution in the reservoir.	See Table S-2, mitigation for Impact HEH-9	Less than Significant
4. Impacts to humans from odors	Impact HEH-10a: Adverse Impacts from odor are considered significant but mitigable.	See Table S-2, mitigation for Impact HEH-9	Less than significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-7. Significant Impacts and Mitigation for Alternative E[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
Water Resources: Geomorphology and Hydrology			
1. Tributary Incision	Impact H-8: During the dewatering and refill period, there is a potential for tributary head-cutting for at least three runoff seasons. The impact on tributary head-cutting is significant but mitigable.	See Table S-2, mitigation for Impact H-2	Less than Significant
Surface Water Quality			
1. Elevated turbidity due to erosion of lake sediments	Impact WQ-27: Elevated turbidity resulting from erosion caused by head-cutting of tributaries and incision of reservoir sediments is a significant and unavoidable adverse impact.	None available	Not applicable
2. Anoxic reservoir condition develops earlier in summer	Impact WQ-28: Anoxic reservoir condition develops earlier in the summer season than under No Impact. This adverse impact is significant and unavoidable.	None available	Not applicable
3. Reduced flow in Big Grizzly Creek results in decreased dissolved oxygen and increased water temperature	Impact WQ-31: Reduced flows in Big Grizzly Creek during the treatment period (under the Proposed Neutralization Method and Options A and B) could result in decreased dissolved oxygen concentrations and increased water temperatures in Big Grizzly Creek. This adverse impact is significant and unavoidable.	None available	Not applicable
Groundwater			
1. Private Supply (Wells in Vicinity of Reservoir) – Groundwater Levels	Impact G-8: Based on hydrologic, physical and chemical properties, concentrations of rotenone formulation constituents and potassium permanganate are anticipated to be below detection levels in all wells in close proximity to Big Grizzly Creek. Therefore, it is concluded that Neutralization Option 3 would have a less than significant adverse impact on groundwater quality in wells near Big Grizzly Creek.	Mitigation G-8: No mitigation measures are required. However, well monitoring will continue. A well monitoring program would be developed if, and as required by, and in consultation with the California Department of Health Services and the Central Valley Regional Water Quality Control Board and in coordination with the ongoing Plumas County Environmental Health well testing program. If well monitoring results indicate significant impacts, the effects would be mitigated by providing alternative water supplies. Alternative sources would include trucking in water and/or providing additional storage to replenish supply.	Less than Significant
Noise			
1. Airboat Operation	Impact N-2: Operating airboats would increase local noise levels during chemical application. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact N-2	Less than significant
2. Construction Noise	Impact N-4: Construction noise associated with the pipelines proposed for Alternative E would impact sensitive receptors during pipeline, pump, and generator placement/installation. The adverse impact is significant but mitigable.	Mitigation N-4: The Department of Fish and Game shall properly maintain and tune engines of all pipeline construction equipment and maintain properly functioning mufflers on all internal combustion engines to minimize noise emissions associated with the pipeline. For construction, the Department of Fish and Game shall ensure that all noise generated from construction-related equipment and activity complies with applicable Plumas County and U.S. Forest Service noise standards. If the Department of Fish and Game determines that the noise standards may be	Less than significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-7. Significant Impacts and Mitigation for Alternative E[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		exceeded, the Department of Fish and Game shall obtain a variance or other authorization from the applicable regulating agency. Noise standards may be exceeded based on the technical feasibility of a measure to reduce noise (technical feasibility would take into consideration cost, availability, and the overall project objectives). Compliance during planning and construction shall be monitored by the Department of Fish and Game or by a Department of Fish and Game-approved construction monitor.	
3. Pumps and Generators	Impact N-5: Operation of pumps and generators associated with dewatering would impact sensitive receptors. The adverse impact is significant but mitigable.	Mitigation N-5: The Department of Fish and Game shall implement a telephone hotline which members of the public can use to relay concerns regarding the project, including issues associated with noise. The Department of Fish and Game shall respond to complaints of noise caused by pump(s) and/or generators during dewatering under Alternative E. The Department of Fish and Game shall investigate the complaint by measuring noise levels at the perimeter of the work area or adjacent to sensitive receptors to determine if noise levels exceed levels identified in Section 6.2.4.1 for various equipment. In the event that expected noise levels are exceeded, the Department of Fish and Game shall implement feasible and appropriate measures such as scheduling system maintenance, replacement, and/or adjustments, to address the complaint. Complaints filed and the approach used to resolve the complaint shall be reported to the Department of Fish and Game and/or U.S. Forest Service.	Less than significant
4. Helicopter Noise	Impact N-6: Helicopter noise could impact sensitive receptors. The adverse impact is significant but mitigable.	Mitigation N-6: Establish flight paths away from or high above sensitive receptors to reduce noise to acceptable levels. Flights into and out of the project area would avoid overflights of sensitive receptors by using the length of the reservoir bed as much as possible. If helicopters were maintained at a distance of at least 1,500 feet from sensitive receptors, the relatively short duration helicopter noise would not cause a substantial increase in noise levels or cause a significant disturbance. If the 1,500-foot distance was not maintained noise levels would exceed those of other equipment being used for the project, including airboats and construction equipment.	Less than significant
Aquatic Resources			
1. Reduced Flow in Big Grizzly Creek below Lake Davis a. Desirable Fish	Impact AR-43: The impacts from Alternative E would be significant and mitigable to desirable fish species because flows in Big Grizzly Creek would be substantially affected for weeks to months or longer during refill. The reservoir would not be expected to refill in less than two years. However, normal minimum instream flow releases would be expected to be made within this timeframe, so restocking of Big Grizzly Creek could occur.	See Table S-2, mitigation for impact AR-5	Less than Significant
b. Loss of Individual Taxa	Impact AR-46: The impacts from Alternative E would be significant and unavoidable as it may result in the loss of macroinvertebrate species for more than two years-	None available	Not applicable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-7. Significant Impacts and Mitigation for Alternative E[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	because flows in Big Grizzly Creek would be substantially affected for weeks to months or longer during refill. Reduced flows and poor water quality would affect macroinvertebrate communities in the entire stream during the period the reservoir is at minimum pool and before it refills.		
2. Dewatering Lake Davis a. Desirable Fish	Impact AR-48: The impact of dewatering Lake Davis under Alternative E would have significant and unavoidable impacts to desirable fish populations as the reservoir is anticipated to take up the four years to refill. Thus re-establishment of desirable fish populations would take longer than the two year criterion.	None available	Not applicable
b. Macroinvertebrate Community	Impact AR-50: The impact of dewatering Lake Davis under Alternative E would have significant and unavoidable impacts to macroinvertebrate communities. The reservoir is anticipated to take up the four years to refill. Thus re-establishment of these communities would take longer than the two year criterion.	None available	Not applicable
c. Loss of Individual Taxa	Impact AR-51: The impact of dewatering Lake Davis under Alternative E would be significant and unavoidable, as it would likely result in the loss of individual taxa for more than two years.	None available	Not applicable
3. Dewatering the Tributaries a. Desirable Fish	Impact AR-52: The impact of dewatering the tributary streams would be significant but mitigable to desirable fish species, as dewatering the tributaries is anticipated to kill all fish. Desirable fish species would be restocked based on the Fisheries Management Plan.	See Table S-2, mitigation for impact AR-5	Less than significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-7. Significant Impacts and Mitigation for Alternative E[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
b. Special Status Macroinvertebrates	Impact AR-53: The impact of dewatering the tributary streams would be significant but mitigable to special status macroinvertebrate species. The amphibious caddisfly is known to occur in Big Grizzly, Old House and Cow creeks. Individuals may be affected by access to and from the stream channels to install pipes and pumps and by drying stream reaches. Other special status macroinvertebrate species may also occur in these streams.	See Table S-2, mitigation for impact AR-10	Less than significant
c. Loss of Individual Taxa	Impact AR-55: Impacts from Alternative E would be significant and unavoidable, as dewatering streams may result in the loss of individual taxa for more than two years. Because of the extent of the treatment area and the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
4. Dewatering Springs and Other Waters a. Desirable Fish			
b. Special Status Macroinvertebrates	Impact AR-57: The impacts of dewatering the springs and other waters would be significant but mitigable to special status macroinvertebrate species. The amphibious caddisfly is known to occur in two unnamed springs. Individuals may be affected by access to and from the springs to install pipes and pumps and by pumping out the springs and other waters. Other special status species may also occur.	See Table S-2, mitigation for impact AR-10	Less than significant
c. Loss of Individual Taxa	Impact AR-59: Impacts from Alternative E would be significant and unavoidable, as dewatering springs and other waters may result in the loss of individual taxa for more than two years. Because of the patchy geographic and temporal distribution of macroinvertebrates, mitigation of this potential impact is infeasible.	None available	Not applicable
Wildlife Resources			
1. Reduction of aquatic and wetland habitats used by terrestrial wildlife due to drawdown of Lake Davis.	Impact TW-9: The total drawdown of, and activities associated with, dewatering of tributary streams to Lake Davis that are potentially occupied by mountain yellow-legged frog, foothill yellow-legged frog, and northwestern pond turtle may result in mortality to individuals, and loss and/or degradation of habitats. These activities may also destroy and/or degrade suitable habitat for willow flycatcher and yellow warbler. The adverse impact is significant but mitigable.	Mitigation TW-9a: Due to the potential for mortality of the mountain yellow-legged frog, foothill yellow-legged frog, and northwestern pond turtle from dewatering and/or the physical degradation of habitats associated with water drawdown activities, additional surveys for these species will be conducted in all areas of suitable habitat in tributary streams to Lake Davis where activities such as cofferdam construction or removal of streamside vegetation is to take place. These surveys will be conducted in accordance with standard protocols (DFG 2004c and DFG 2006g) during the same year of treatment and prior to major activities associated with dewatering of streams. If any of these species are found	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-7. Significant Impacts and Mitigation for Alternative E[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		in areas to be dewatered, a concerted effort will be made to capture as many individuals as possible beginning two weeks prior to construction of cofferdams and/or removal of streamside vegetation. These individuals will be transported and released in suitable habitat in the immediate project area that would not be subject to dewatering, or held for release where captured following dewatering. Prior to transplantation of any animals to an adjacent waterbody, amphibians at both the source and donor sites will be tested for chytrid fungus (Batrachochytrium dendrobatidis). If animals from Lake Davis test positive, they would not be transplanted. If the proposed recipient site tests positive, alternate recipient sites should be screened until a site is found where chytrid fungus is absent. Decisions on whether animals are to be held animals or where they are to transplanted would be done in coordination with USFS and DFG biologists.	
		Mitigation TW-9b: Suitable willow flycatcher habitat along tributary streams will be flagged in order to reduce physical damage to vegetation during dewatering of these streams. Personnel would be informed of the presence of the flagging and the importance of minimizing damage to these habitats.	Less than Significant
		Mitigation TW-9c: Impacted riparian habitat along tributary streams will be restored to the maximum extent possible.	Less than Significant
		Mitigation TW-9d: Suitable willow flycatcher habitat impacted by dewatering activities will be restored at a ratio of three acres for each acre impacted.	Less than Significant
2. Impacts to fish-eating terrestrial wildlife due to temporary reduction of the fish community and treatment and/or dewatering of Lake Davis and tributaries.	Impact TW-4: The drawdown and/or treatment of Lake Davis with rotenone would result in a temporary loss of the primary food base for bald eagles and ospreys utilizing the reservoir and may contribute to nest failure for territories associated with Lake Davis. Initiating rotenone treatment prior to September 1 may constitute disturbance to nesting eagles due to the loss of the fishery prey base. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-4	Less than Significant
3. Impacts to insectivorous terrestrial wildlife due to temporary reduction of the aquatic invertebrate community through treatment and/or drawdown of Lake Davis.	Impact TW-5: The temporary loss of aquatic insects and their terrestrial forms may impact terrestrial species of insectivorous wildlife, including amphibians, reptiles, bats, and birds. The willow flycatcher is highly dependant on the aquatic-derived invertebrate prey base and suitable habitat is present in the project area. Activities related to the dewatering of streams and/or rotenone treatment may be initiated prior to September 1 and may overlap with the end of the willow flycatcher's nesting period. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-5	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-7. Significant Impacts and Mitigation for Alternative E[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
4. Impacts to terrestrial wildlife due to disturbance associated with treatment and/or water drawdown activities at Lake Davis and its tributaries.	Impact TW-10: Activities associated with dewatering of Lake Davis tributary streams may cause disturbance to bald eagles and great gray owls if these activities are initiated prior to September 1 in the vicinity of active nest sites. Disruption of willow flycatchers may occur prior to September 1 along tributary streams where suitable habitat is located. The adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact TW-6a	Less than Significant
Botanical Resources			
1. Temporary loss of riparian vegetation	Impact VEG-2: The temporary loss of riparian vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-2	Less than Significant
2. Temporary loss of wetland vegetation	Impact VEG-3: The temporary loss of wetland vegetation is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-3	Less than Significant
3. Direct impacts to special status plant species	Impact VEG-4: Direct adverse impacts to special status plant species are significant but mitigable.	See Table S-2, mitigation for Impact VEG-4	Less than Significant
4. Noxious weed colonization of ground disturbed by project-related actions	Impact VEG-5: Noxious weed colonization of ground disturbed by Project-related actions is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact VEG-5	Less than Significant
Land Use			
1. Exposed gap in fencing with Lake Davis drawdown	Impact LU-1: Containment of cattle in the Grizzly Valley allotment as reservoir drawdown falls below the current fence extending into Lake Davis. This adverse impact is significant but mitigable.	See Table S-2, mitigation for Impact LU-1	Less than Significant
2. Coordination with Freeman Project	Impact LU-2: Overlap in project areas and traffic from the Proposed Project and Freeman Project is a significant but mitigable adverse impact.	See Table S-2, mitigation for Impact LU-2	Less than Significant
3. Coordination with Freeman Project	Impact LU-6: Dewatering tributaries would have an adverse impact on the need for adequate water supply for timber operators' water tending devices. This adverse impact is significant but mitigable.	Mitigation LU-6a: The DFG shall implement Mitigation LU-2a. Mitigation LU-6b: The DFG shall implement Mitigation LU-2b. Mitigation LU-6c: The DFG shall work with the timber sale layout coordinator for the Freeman Project and find an alternate source of water on the west side of Lake Davis for the water tending devices, such as a temporary water tank.	Less than Significant
		Mitigation LU-5c: The DFG shall work with the timber sale layout coordinator for the Freeman Project and find an alternate source of water on the west side of Lake Davis for the water tending devices, such as a temporary water tank.	Less than Significant
Aesthetics			
1. Amount of exposed lakebed observable	Impact A-10: A band of bare shoreline followed by a completely exposed reservoir bed would be visible from foreground and middleground distances to recreationists and the general public for eight months during the year the reservoir was dewatered would	None available	Not applicable

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-7. Significant Impacts and Mitigation for Alternative E[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	occur for up to an additional 41 months during refill. The impact on aesthetics would be significant and unavoidable.		
Cultural Resources			
1. Ground Disturbance in Staging Areas	Impact CR-1: Proposed Project activities in staging areas, storage areas, and tributary access areas could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-1	Less than Significant
2. Ground disturbance from ramp extension	Impact CR-2: Extension of the boat ramp in order to allow boat access to Lake Davis as reservoir levels drop could affect cultural resources through ground disturbance. The impact from ground disturbance is significant but mitigable.	See Table S-2, mitigation for Impact CR-2	Less than Significant
3. Erosion from lake drawdown	Impact CR-3: The dewatering of the reservoir could potentially cause erosion to potential cultural resource sites. The impact from erosion is significant but mitigable.	See Table S-2, mitigation for Impact CR-3	Less than Significant
Recreation			
1. Loss of Recreation Use at Lake Davis	Impact R-10: Direct adverse impact due to loss of recreation use at Lake Davis for up to four seasons is significant and unavoidable.	Mitigation R-10: The DFG shall implement Mitigation R-4 to promote recreation use at Lake Davis. However, this measure is not sufficient to reduce the impact to less than significant.	Significant and unavoidable
2. Crowding at Frenchman Lake	Impact R-11: Indirect adverse impact of visitor displacement to Frenchman Lake for up to four seasons would result in crowding impacts and physical deterioration of recreation facilities. The impact is significant but mitigable.	Mitigation R-11: The DFG shall implement Mitigation R-2 and shall contribute $20,000 to pave the overflow parking area at Lunker Point.	Less than Significant
3. Constraints on Big Grizzly Creek Recreation	Impact R-3: Under the Proposed Project there could be no days when the Grizzly Ice Pond is useable for recreation. This would be a significant adverse impact, but can be mitigated to less than significant.	See Table S-2, mitigation for Impact R-3	Less than Significant
Public Services			
1. Domestic Public Water Supplies	Impact PS-29: There is the potential for Alternative E to delay use of Lake Davis as a domestic water supply source for the City of Portola and GRLID by delaying water deliveries of the new water treatment plant. This could result in both entities having to remain on their community groundwater systems for a longer period of time than without Alternative E. Based on the capacity of these systems, there may not be sufficient water supplies in the City of Portola and the GLRID service	See Table S-2, mitigation for Impact PS-4	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.

Table S-7. Significant Impacts and Mitigation for Alternative E[1]

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
	area to meet water demands during this 12-month period corresponding to refill of the reservoir to 5,750 feet. Further, the City of Portola could have to continue use of its community groundwater system, which currently exceeds Federal standards for arsenic. These temporary adverse impacts are significant, but mitigable.		
2. Downstream Water Supplies	Impact PS-30: On a temporary basis, downstream water users could potentially be affected during treatment and neutralization period under Alternative E as a result of reduced water flows from Grizzly Valley Dam. This represents a significant, but mitigable, adverse water supply impact.	See Table S-2, mitigation for Impact PS-5	Less than Significant

[1]Less than Significant impacts with mitigation proposed are not included in this table.